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Modern classic
Exposure's new 3510 pre/power

'S' Factor
Pro-Ject's latest Debut PRO deck

Vintage
Technics SL-XP5

INVESTIGATION
Twice as nice
Our pick of the top double albums

Clearaudio Jubilee MC
The 'bullet-proof' pick-up

Phoenix rising
Lowther returns with the Almira

PLUS...
AVID Reference Three, Emotiva BasX TA1, DS Audio ES-001, Canor Precision Tube DAC 2.10 & Audiojumble 2022

• **OPINION** 12 pages of letters and comment • **VINYL RELEASE** The Staple Singers' *Respect*... LP
• **CLASSICAL COMPANION** Dvořák's 'New World' Symphony • **STUDIO TOURS** ABBA's Polar Studios
• **VINYL ICON** The Stranglers' *The Raven* from 1979 • **READERS' CLASSIFIEDS** Hi-Fi bargains galore

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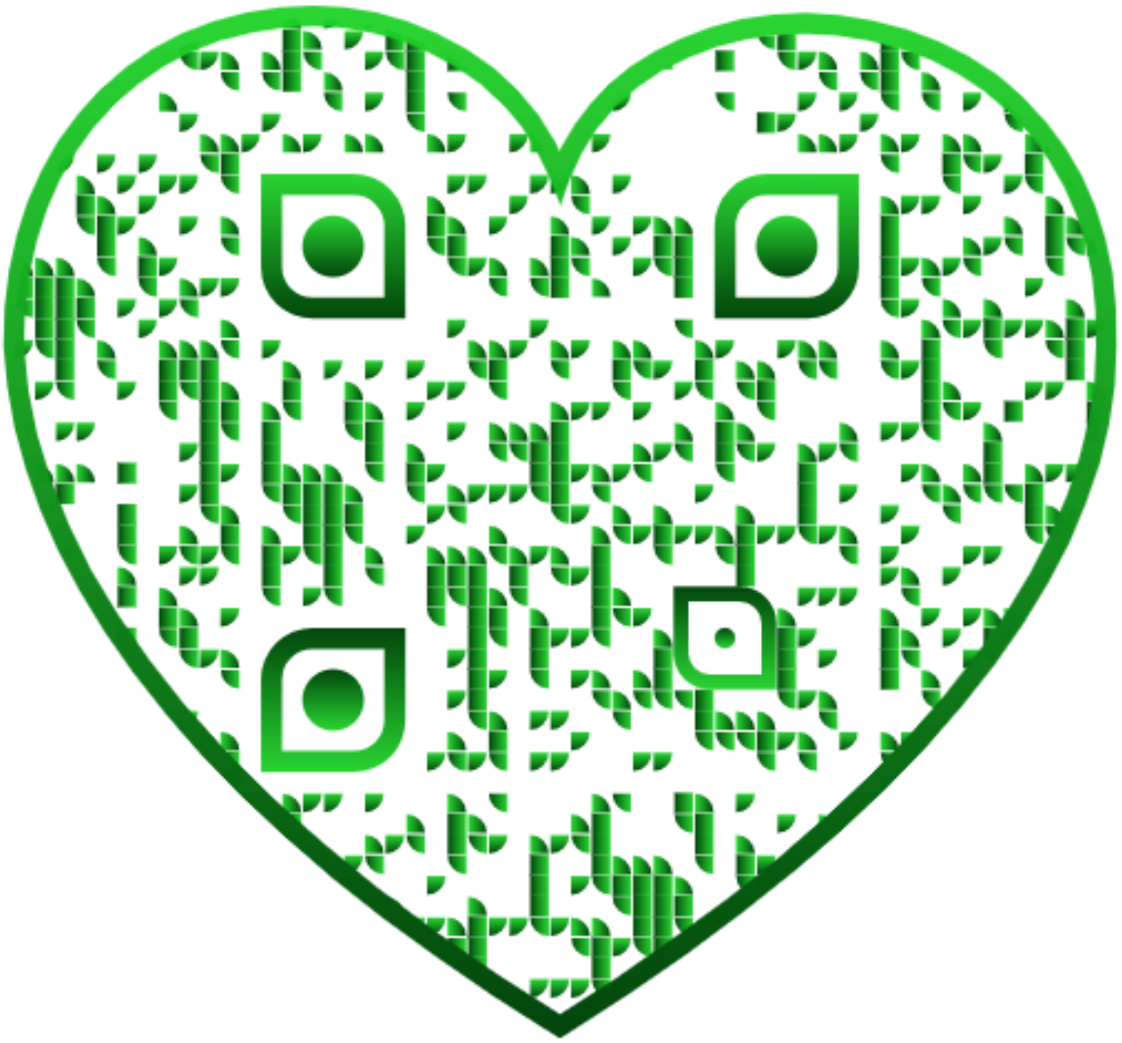

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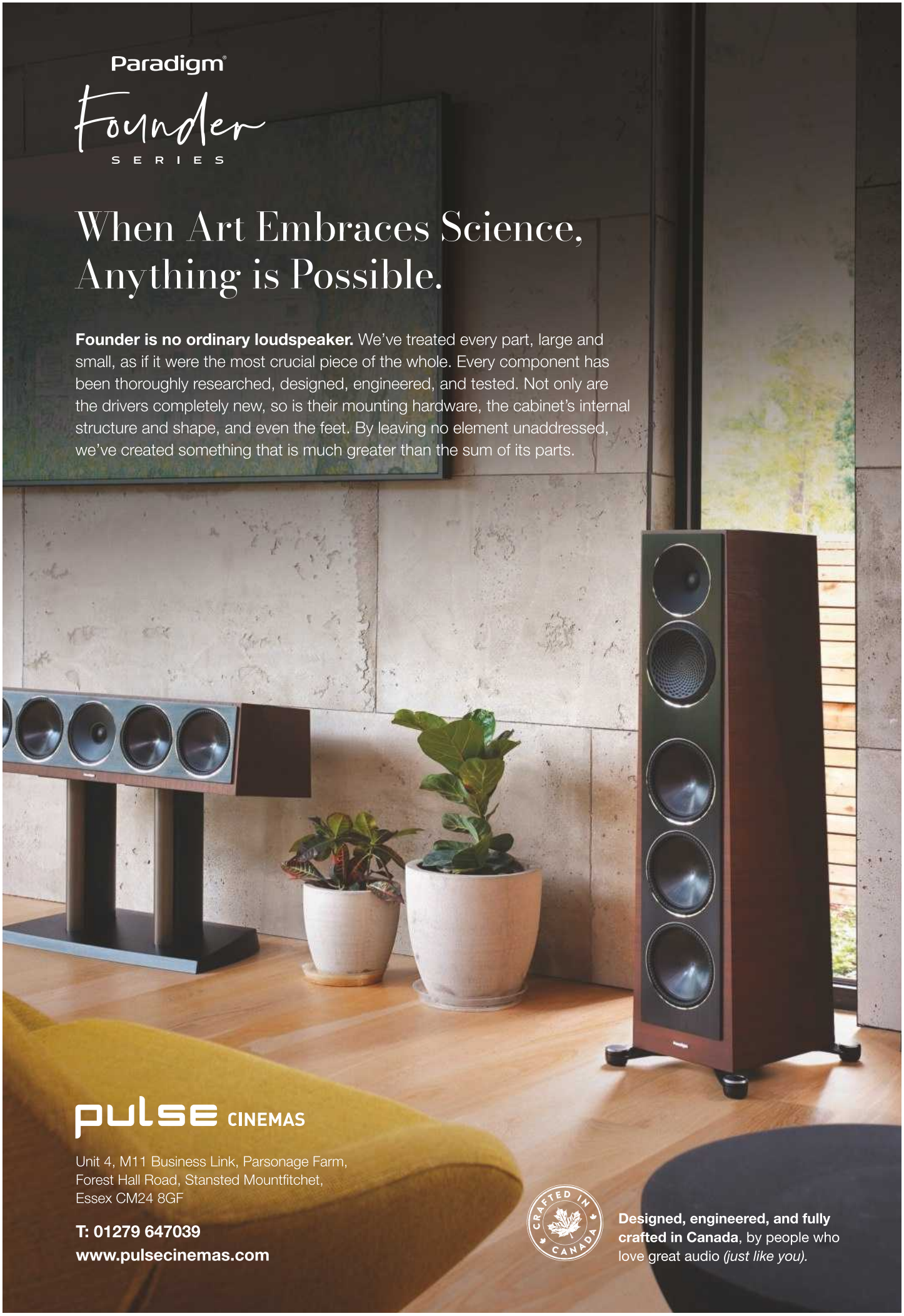
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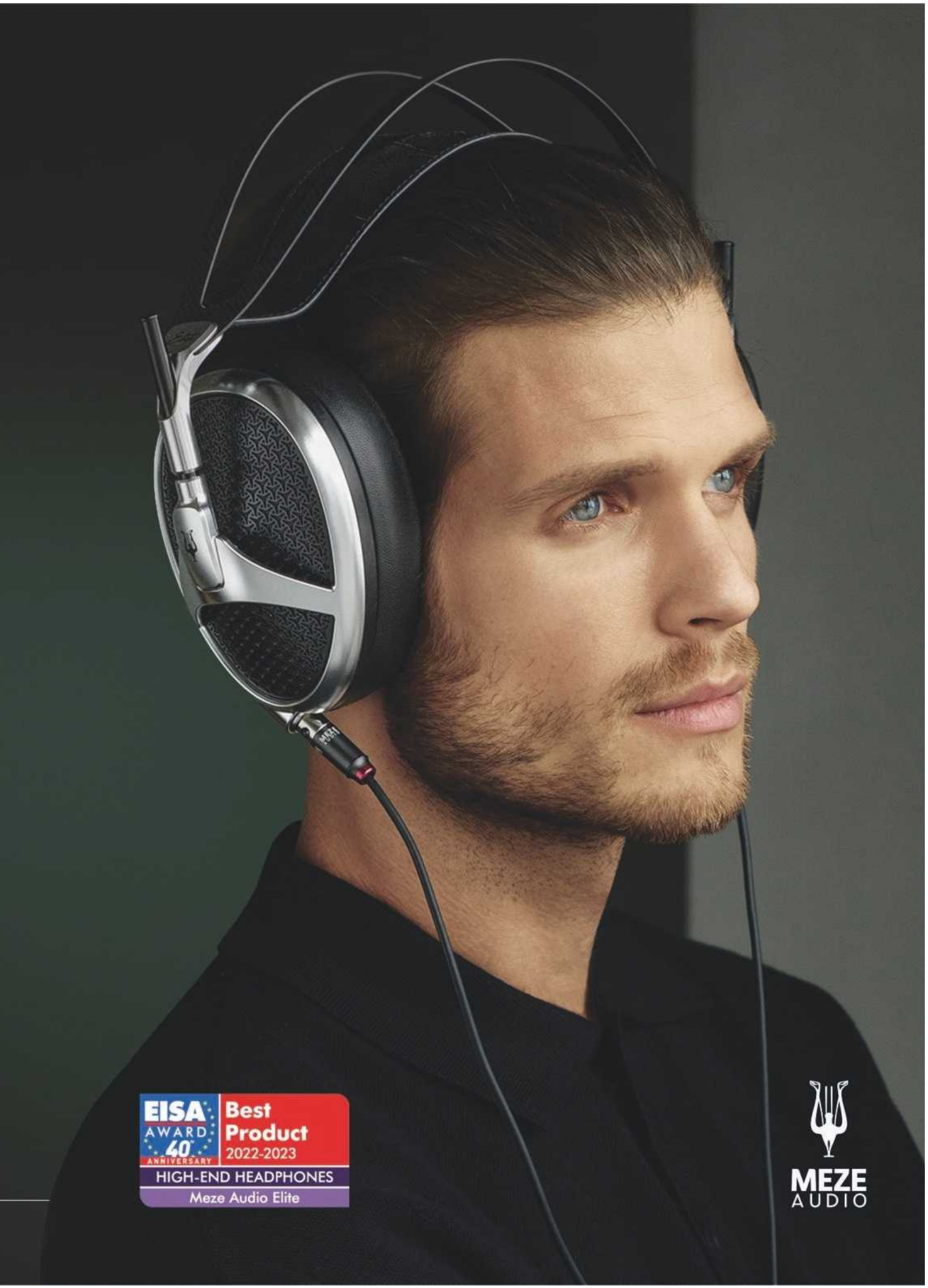
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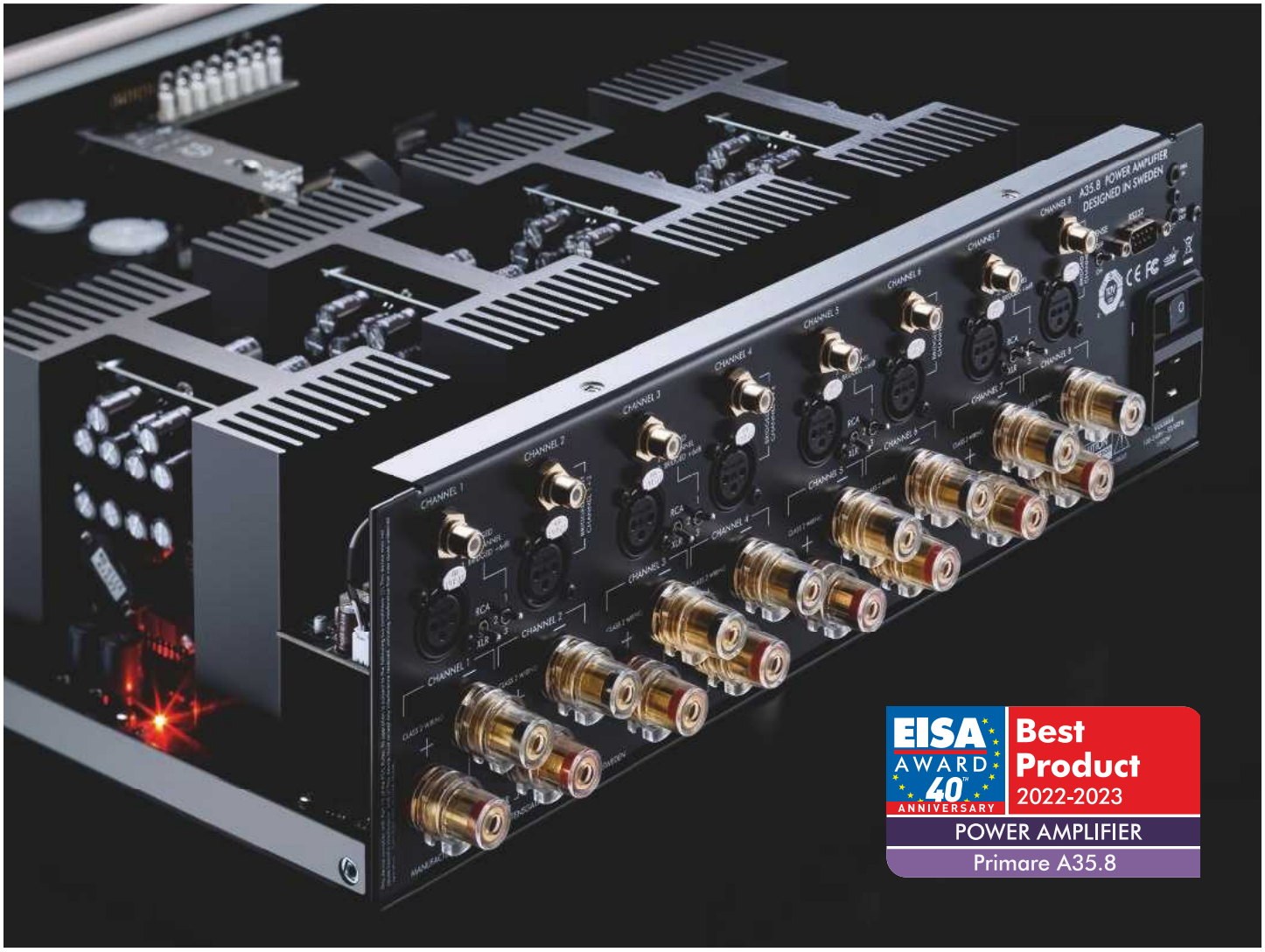

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That's the way you need it
Any way you want it...

Primare's award winning A35.8 eight channel fully bridgeable amplifier offers configuration options for virtually any audio system.

▸ Turn the page to see layout diagrams that illustrate this system building versatility.

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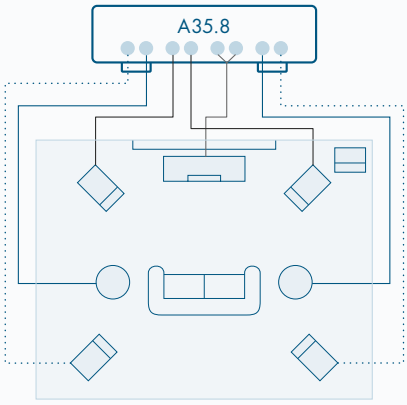
Not only is the A35.8 the most powerful amplifier Primare has ever built, but it is also the most flexible as a result of the ability to bridge each pair of its eight channels to mono.

The bridging capabilities of the A35.8 allow it to be used in a variety of system configurations, with or without the addition of our A35.2 stereo amplifier, to suit practically any system requirements.

5.1.2 DOLBY ATMOS/DTS:X SYSTEM



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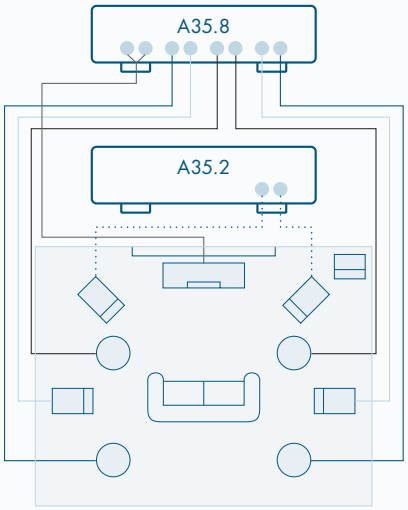
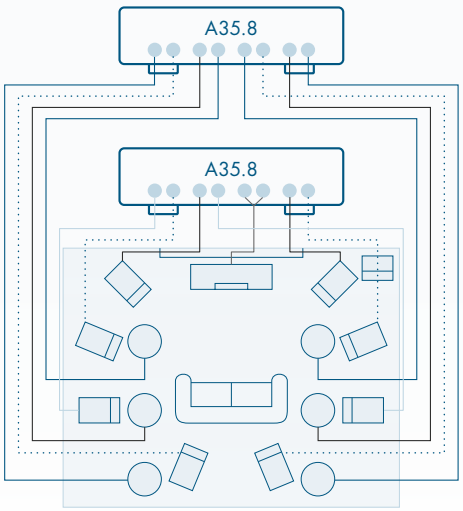


9.1.6 ATMOS/DTS:X SYSTEM



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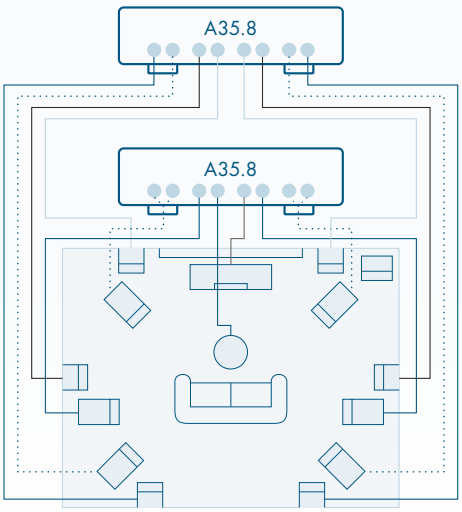

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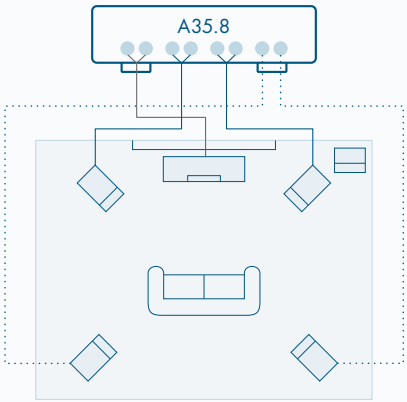

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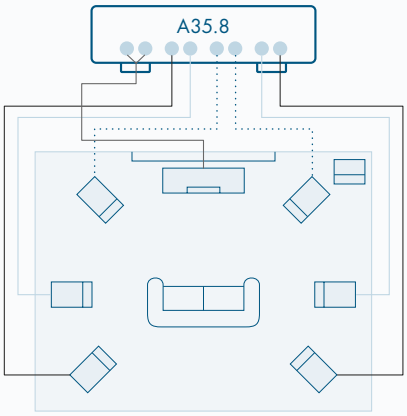

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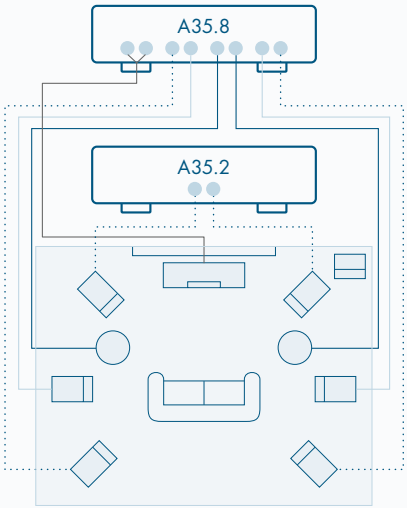

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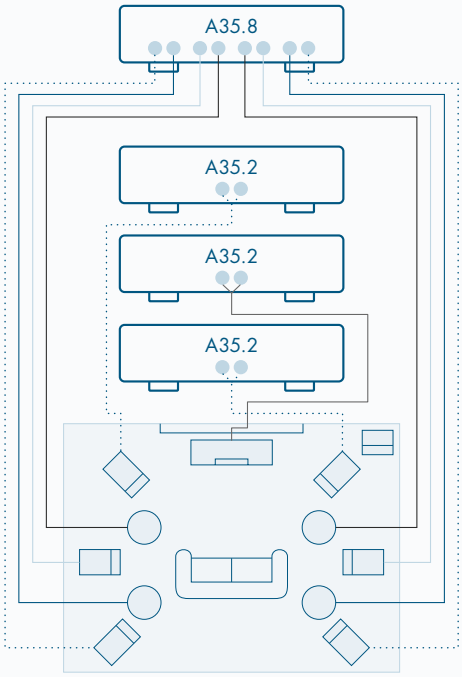
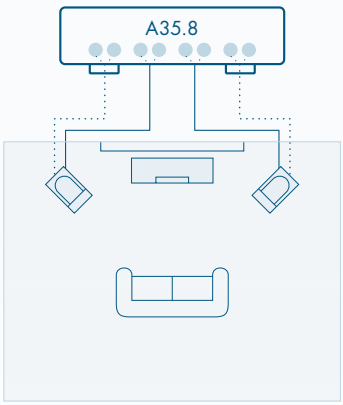


2.0 BI-AMPED STEREO SYSTEM



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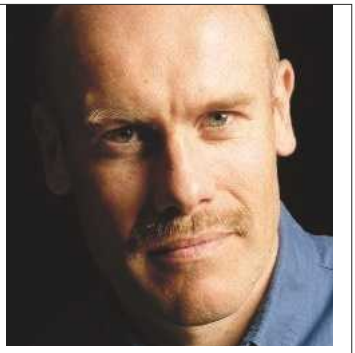
RIGHT: For the vinyl fan who has (nearly) everything – DS Audio's ES-001 'eccentricity stabiliser'. See p74

ABOVE: Canor mixes a new digital platform with its traditional triode tube output stage in the Precision Tube DAC 2.10. It's a winner, p58

MUSIC: Our Vinyl Icon, *The Raven*, proved The Stranglers were no flight of fancy (p82) while Steve Sutherland evangelises for The Staple Singers' *Be Altitude: Respect...* now on 180g (p80)

RIGHT: *HFN* is the UK's representative of EISA's Hi-Fi Expert Group. Editor Paul Miller took over as EISA's President in June 2016 and was re-elected in 2021



There are occasions, possibly just once in a lifetime, where an event of such momentous, historic importance stops us in our tracks. Wherever we were, whatever we were doing, these are the rare moments that become indelibly imprinted upon our personal and collective memories. For many of us, Thursday the 8th September 2022 will be that day.

Early that morning the great and good of the hi-fi industry had begun to arrive at the Ascot Grandstand, home to the UK Hi-Fi Show *Live* in September and, to the wider world, Royal Ascot in June, the crowning glory of the premier horse racing calendar.

Huge flightcases, crates and boxes were being lifted up through the Grandstand's four main elevator cores and the world's most exciting, and rare, audio systems were taking shape. Exclusive product launches were being made ready as audio's senior ambassadors arrived from as far afield as the US, Japan and even Australia for the premium event in *our* calendar. The buzz was growing.

And then, in early evening, the devastating news of the passing of Her Majesty Queen Elizabeth II. An extraordinary 70 years of constancy, of service to the nation. It was the end of the second Elizabethan era.

I walked the floors of the Grandstand, now so familiar after years of site visits, one more time. Through the 4th floor Royal Enclosure concourse down to the 2nd floor walkway past Ascot Authority with the painting of Her Majesty, and past the Royal Box with those iconic crop and whip handles. I moved outside to gaze up at the vast sweep of the Grandstand and see the Union flag lowered to half mast.

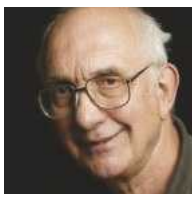
> 'Hi-fi's ambassadors arrived from far afield. The buzz was growing'

And then I witnessed something extraordinary – the stunned faces of hi-fi colleagues followed by the remarkable sight of an industry proceeding with quiet, disciplined dignity to break down those systems, and repack the crates and boxes. I cannot adequately express my gratitude for their stoic professionalism.

The UK Hi-Fi Show *Live* will return to Ascot in 2023.

PAUL MILLER GROUP EDITOR

HI-FI NEWS' EXPERT LINE UP: THE FINEST MINDS IN AUDIO JOURNALISM BRING THEIR EXPERIENCE TO BEAR ON ALL AREAS OF HI-FI & MUSIC



BARRY FOX
Investigative journalist supreme, Barry is the first with news of the latest developments in hi-fi and music technologies

DAVID PRICE
An avid collector of audio treasures, and life-long hi-fi addict, DP lends his ears and experience from analogue to digital

KEN KESSLER
is a long-serving contributor, luxury goods writer and champion for the renaissance in valves and 'vintage hi-fi'

MARK CRAVEN
Editor of our sister title *Home Cinema Choice*, Mark's passion for music extends from stereo to multichannel and Dolby Atmos

STEVE HARRIS
Former Editor of this very title from 1986 through to 2005. A lifetime in audio and a love of jazz makes Steve a goldmine

ANDREW EVERARD
has reviewed hi-fi for over 30 years and is still effortlessly enthusiastic about new technology, kit and discovering new music

STEVE SUTHERLAND
Editor of *Hi-Fi Choice*, Steve was at the helm of *NME* through the Britpop years. Steve brings a unique slant to our music features

Power by PS Audio

FLAGSHIP PERFECTWAVE BHK 600 MONOBLOCKS

The last PS Audio model to be designed by veteran engineer Bascom H King, who passed away in May this year, the PerfectWave BHK 600 Mono Power Amplifier becomes the company's flagship amp. Priced £32,000 per pair, and offered in silver or black, each 49kg unit claims to deliver 600W/8ohm (1kW/4ohm), and continues the Boulder, Colorado company's hybrid amp design approach. A vacuum tube/rectifier input stage (using Gold Lion devices) is combined with a solid-state N-channel MOSFET output, the latter given its own separate 1.6kVA power transformer.

Fully balanced throughout, although with single-ended RCA inputs in addition to balanced XLRs, the BHK 600 features continuous microprocessor monitoring of its PSU, bias levels, and 'extensive protection circuitry'. PS Audio says this allows the amp to be safely left ticking over to ensure 'optimum sonic performance' (albeit with a suggested idle power consumption of 225W). Twin sets of gold-plated binding posts, supporting bi-wiring, are joined by 12V trigger in/outs and a USB port for firmware updates. Chassis construction and styling follows that of the earlier BHK Mono 300, but with front-mounted carry handles.

PS Audio, Colorado, US, 07738 007776; www.psaudio.com; www.signaturesystems.co.uk

Polished platinum

MONITOR AUDIO LAUNCHES PLATINUM 3G

After showcasing its prototype Concept 50 floorstanders, Monitor Audio has doubled down on its 50th anniversary celebrations by announcing a third generation of its current flagship Platinum series. The four-strong range, available from November, consists of the 200 3G 'mid-sized' and 300 3G 'formidable' floorstanders, 100 3G standmount, and 250 3G centre channel speaker. All feature MA's MPD III (Multi-Pleated Diaphragm) treble driver – a development from the Concept 50 – plus newly optimised RDT III midrange units and bass drivers with revised voice coils. The Platinum 3G's curved-baffle cabinets will sell in Piano Ebony, Piano Black and Pure White Satin, with prices from £3500 to £11,500.

Monitor Audio Ltd, Essex, 01268 740580; www.monitoraudio.com

HI-FI NEWS' NUGGETS

EXTRA EXPOSURE

Hot on the heels of its integrated [*HFN* Nov '21] and stereo pre/power combination [see p50], Exposure has topped-off its new 3510 amplifier series with a monoblock, priced £2990 for a stereo pair. Built into the same elegantly minimalist chassis as the other 3510 components, the monoblocks are rated at 100W/8ohm. While this is notionally less than the 110W specified for the 3510 stereo amps, there is an expectation its 'high capacity power supply' will offer greater output and prove even more capable of driving lower impedance loads.
www.exposurehifi.com

ATLAS ADVANCES

Inspired by the flagship Asimi range, the all-new Arran Transpose interconnect (£2350/1m) and partnering speaker cable (£4795/2m) from Atlas feature OCC copper conductors and the brand's Grun RF shielding. All connections are cold-welded at the factory in Scotland.
www.atlascables.com

Standing Ovation

AVM OVATION CS 8.3 ALL-IN-ONE PLAYER

Germany's AVM has reissued its top-end Ovation CS 8.3 in Black Edition guise, with changes to the all-in-one player including modifications to the tube output stage, 'hand-picked' ESS9038PRO chips for its fully balanced double-quad DAC stage, temperature-controlled clocks and improved power supply. Priced £15,950 (the standard version remains on sale at £13,250), the CS 8.3 Black Edition retains its junior model's functionality, including CD replay via a custom TEAC slot-in drive mechanism, 384kHz/32-bit and DSD128 playback over asynchronous USB, Internet radio and streaming service integration, and a rated 2x500W power output. A further upgrade sees the Ovation's chassis and controls adorned with a 'night black' finish, plus 'Black Edition' branding.

AVM (Audio Video Manufaktur) GmbH, Germany, 01767 686300; www.avm-audio.com; www.pmc-speakers.com

Mission accomplished

REIMAGINED CLASSICS GET A STARTER STANDMOUNT

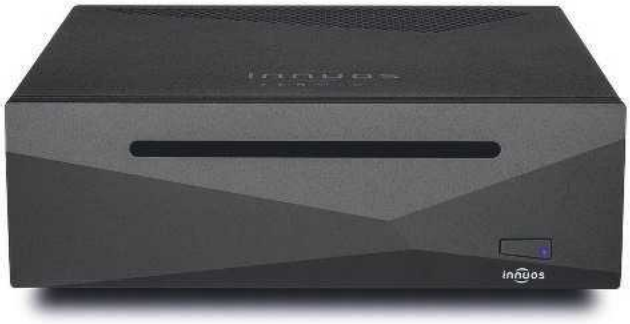
Just as Mission followed its original 1970s-era 770 loudspeaker with the closely related, but more compact, 700 model, the company has now resurrected the latter to follow the recent arrival of the 're-engineered' 770 [*HFN* Jun '22]. Once again, the new speaker honours the original's styling and general two-way specification while featuring a new 165mm mineral-loaded polypropylene bass/mid driver and 28mm dome tweeter.

Bass extension is to a claimed 38Hz, aided by the 510x260x270mm (hwd) cabinet's front-facing reflex port. Real wood veneer options for the damped, dual-layer enclosure are black or walnut (both with white front baffle). Pricing is £1299, with dedicated stands available for £299, or bundled with the 700s for a reduced £1499 system price.

Mission, Cambs, 01480 447700; www.mission.co.uk

Drive time

INNUOS ZENMINI GOES FULLY SOLID-STATE



Innuos has given its ZENmini music streamer/server an under-the-hood overhaul, replacing its hard disk drive with a faster, quieter SSD and also increasing the system RAM to 8GB (from 4GB). The new ZENmini S is priced at £1549 (1TB), £1749 (2TB) and £1999 (4TB), and slots into the range alongside the HDD-based ZENmini Mk3.

Also offered in response to customer feedback, owners of the Mk3, and the earlier Mk2, will be able to upgrade their units to SSD status early next year. The Portugal-based digital audio specialist has also released a new version of its custom operating system (InnuOS 2.2.0) which – together with the Innuos Sense App (Android, iOS, Fire) – handles music library organisation and integration of on-demand platforms. New features include automatic downloads of album artwork, user-editing of Artist Information, and improved search functionality.

Innuos, Faro, Portugal, 02475 200 210; https://innuos.com

ART of analogue

NEW ADDITION TO AUDIO-TECHNICA'S ART MOVING-COILS

Available for £2749, the AT-ART20 is Audio-Technica's latest addition to its flagship ART range of MC cartridges, and the first to adopt a titanium housing and elastomer 'undercover' to better limit resonances. Advanced cutting techniques have been employed to give the body a distinctive curved surface and reduce the wall thickness, resulting in a cartridge weight of 9.0g.

The AT-ART20 has a nude line-contact stylus and boron cantilever that thickens towards the pivot, improving rigidity and supporting tracking forces of 1.6-2.0g. The magnetic circuit is leveraged from the AT-ART9XI, but claims improvements in flux density and output (550µV/5cm/sec).

Audio-Technica Ltd, Japan, 0113 277 1441; www.audio-technica.com

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Upcoming Events

IMPORTANT DATES FOR YOUR HI-FI DIARY

01-02 OCT	Hi-Files Show, Hotel Holiday Inn, Belgrade, Serbia; *www.hi-files.com*
02 OCT	Autumn Audiojumble, The Angel Leisure Centre, Tonbridge, Kent; *www.audiojumble.co.uk*
28-30 OCT	Warsaw Audio Show, Radisson Blu Sobieski Hotel, Warsaw, Poland; *https://audioshow.pl*
05-08 JAN	International CES 2020, Las Vegas, USA; *www.cesweb.org*
24-26 FEB	Bristol Hi-Fi Show, Marriott City Centre Hotel, Bristol; *www.bristolshow.co.uk*

Audiojumble, Tonbridge

Words & pictures: **Ken Kessler**

OK, so it wasn't quite as if the Covid pandemic had never happened, but it felt great to see a crowd of audiophiles eager to find some bargains. The first Tonbridge Audiojumble since February 2020 was held in May at the Angel Centre in Tonbridge, and it only took a few seconds for it to sink in that normalcy might return. In the interim, vinyl continued its vertical trajectory, while there was a palpable increase in interest in open-reel tape – apparently, it's not just my imagination. I scored a boxed Revox A77 Mk IV Dolby (I swear this is gonna stop…) and the best moment for me was meeting Instagram's hifi.david, a recent convert to reel-to-reel and, to paraphrase Dean Martin talking about Sinatra and Mia Farrow, I have bottles of wine older than him!

Leak is back after numerous false starts, so far fewer enthusiasts (at least, among the under-60s) would have been mystified by the originals for sale at the Audiojumble. I didn't catch the price of this Delta 75 receiver, but its condition appeared near-mint save for a missing on/off knob. It looked typical of a loaded unit, launched circa-1971: 35W per channel, LW/MW/FM wavebands and a curious control labelled 'quasi stereo'.

Among the turntables at the event, there seemed to be a choice of Lencos – perhaps a response to their increasingly 'hot' status, especially the rebuilds from Swiss specialists. This L75 in fine nick was thus a bargain at £125, the price including a Shure M75 cartridge and new idler wheel.

This inspired me to fire up my Quad 33/303 pairing, while realising that, although this exhibitor had two sets for sale, you can no longer anticipate vast numbers of the 'usual suspects'. While there were some Quad IIs, assorted Leak valve amplifiers and the like, they are no longer plentiful, and visitors are no longer spoiled for choice as they were in the past.

Cartridges are always easy to find at the show, but how often are they 'new old stock' examples? Exhibitor Gary Wood acquired a supply of absolutely unused Mayware moving-coil cartridges, including the MC-3L, MC-7V, and MC-2V pictured here, selling at prices below that of comparable modern MCs. I would imagine that, had I the time to fully scour the event, I could have found their ideal match: a Mayware Formula 4 tonearm.

Pre-recorded open-reel tapes filled my table at Tonbridge, which readers who have followed my reel-to-reel rumblings will know I have been curating and cleaning up for those who prefer not to take a punt on used tapes without guarantees. Naturally, the clamour was for rock tapes, but their low survival rates meant that I spent time praising the virtues of Mantovani, Andy Williams, and soundtracks from the 1960s.

Despite my revelation opposite that the old standbys are becoming rare, one vendor had not just one but a selection of fully-rebuilt Leak classics – looking brand-spanking new. Steve Smith (*stevesmith350@hotmail.com)* sells them with brand-new parts, chassis, transformers, NOS McMurdo valve bases, a ventilated mains transformer running far cooler than the original, surplus Leak-branded PCBs, new GZ34s, paper-in-oil caps and more. He was selling the Stereo 20s at the Audiojumble for £1000, and I was seriously tempted.

Among the more rare open-reel decks was this weekend project, a 60-year-old Revox E36 for £150. Probably the most sensible use for it would be to cannibalise it for spares, as certainly some cosmetic and structural parts were common to the C36, D36 and F36. On the other hand, the E36 was the second-generation stereo Revox, so a resourceful restorer might well be on to a winner.

Another hugely desirable item was beckoning me with its siren-like draw, but space and poverty will always prevail. This fully-refurbished Audio Research D-115 stereo power amplifier from 1983 was offered for, I believe, a realistic £1500. New valves, immaculate condition – whoever grabbed this acquired considerable high-end performance for mid-priced money.

Always coveted by show visitors are Nakamichi cassette decks in reasonable shape, and their desirability is only increasing with what some say is a cassette revival. I saw a few at the show, but this gorgeous Nakamichi 700, launched in 1973, stood out. For me, this is still the best-looking cassette deck of all-time, but I didn't have the £750 to secure it. Sigh.

BAT

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VK-3500 amp, Hi Fi News September 2021

"more delicacy than my ears could process...Musical? Naturalistic? Intimate? Take your pick."

VK-80i amp, Hi Fi News December 2021

"this unashamedly expensive converter gets you closer to the music without you even realising it's doing it. Just let it weave its magic..."

REX 3 DAC, Hi Fi News May 2020

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Balanced Audio Technology
balanced.com

Despite the availability of fresh valves from countless online sources, many tube devotees prefer to see and handle the goods instead of buying on faith. Due to the interruption to valve supplies because of the war in Ukraine, I suppose people are acquiring what they can. In addition to loads of used valves on various tables, at least one vendor had plentiful supplies of brand-new, factory-boxed tubes from KR Audio, Ayon, and others, especially triodes including 300Bs, AA-32Bs, 2A3s, alongside Lampizator DACs and other gear.

Another fine LP spinner, the Denon DP-59L is enjoying appreciation in secondhand values as (belatedly) many users are realising that direct-drive turntables don't cause one's hair to fall out/gout/kidney stones. I have no idea what the seller was asking as he/she/they was on an extended break from the stall, but mint examples can fetch £800-£1000 online – and the prices are climbing. Forget Bitcoin: buy Japanese direct-drive decks.

Talk about obscure: those with long memories will recognise this woofer as one of the oddest designs in the history of hi-fi. Made by Yamaha, the spiel was that its shape was of an ear – elephant's or otherwise – or, according to some, a grand piano sounding board. Whatever the logic of its form, it was a failure – but if someone needs a replacement…

As I said, open-reel is on the up. This seller had three for sale: two Revox G36s (£200 for the one needing attention and £300 for one in better shape), and a Tandberg T20A for a tempting £500. If these were being sold online, you could add at least 30% to the prices, so the Audiojumble remains the place to go if you're getting into open-reel.

Not sure if these are the same items seen a few years back, but a recent flurry in collecting circles about the excellence of H H Scott valve gear tells me someone might have found a serious addition for their museum – the near-legendary Type 310D-FM Stereomaster tuner and Type 335 Wideband Multiplex Adaptor. Scott kit is abundant in the USA, as per Dynaco, Crown, *etc*, but here? Hen's teeth. And Yanks will pay $750 just for a Type 335.

inakustik

PHYSICS NOT VOODOO

hi-finews EDITOR'S CHOICE

"...if you're thinking of blowing the cobwebs from your set-up, In-akustik has the air!"

NF-204 Micro Air, Editor's Choice, Hi Fi News, April 2022

"There's a lot of hand-made cable here for the money, making it a reliable bet for that first 'big upgrade'."

LS-204 XL Micro Air, Editor's Choice, Hi Fi News, February 2021

karma
audio-visual

01423 358 846 **karma-av.co.uk**

This was one of a number of Akai 4000D decks at the Audiojumble, and not only are they ideal as a beginner's reel-to-reel but they're plentiful. Prices are all over the place, though, but expect to pay £250 for a decent machine, or go as high as £500 for a minter, maybe more if boxed and as new. I also saw one lucky tape enthusiast leaving the event with a nice Sony TC377, which was the Akai's rival for an entry-level machine.

Thorens turntables are always present at Tonbridge, and they seem to be on the up like Lenco decks (also Swiss), while Garrards, of which there were a few at the show, have remained steady. This clean TD-166 Mk II was offered for £250 with cartridge (a Sony moving-magnet, I think), spare arm wands, a dust cover that was scratch-free and an owner's manual. A truly wise buy – especially as spares are fairly easy to find, in particular replacement belts.

British ultra-rarities always crop up at Tonbridge, like this cool Cooper-Smith valve amplifier. I think it's the Magnum ultra-linear mono valve amp, judging by the brace of EL34s, which means it was good for 20W. That was a fair amount of power in 1961/62, and, as was typical of the era, the Magnum was available as a kit or assembled, for respectively £21.2s.6d or £23.12s.6d. Give or take a few quid, that's around £500 in today's values.

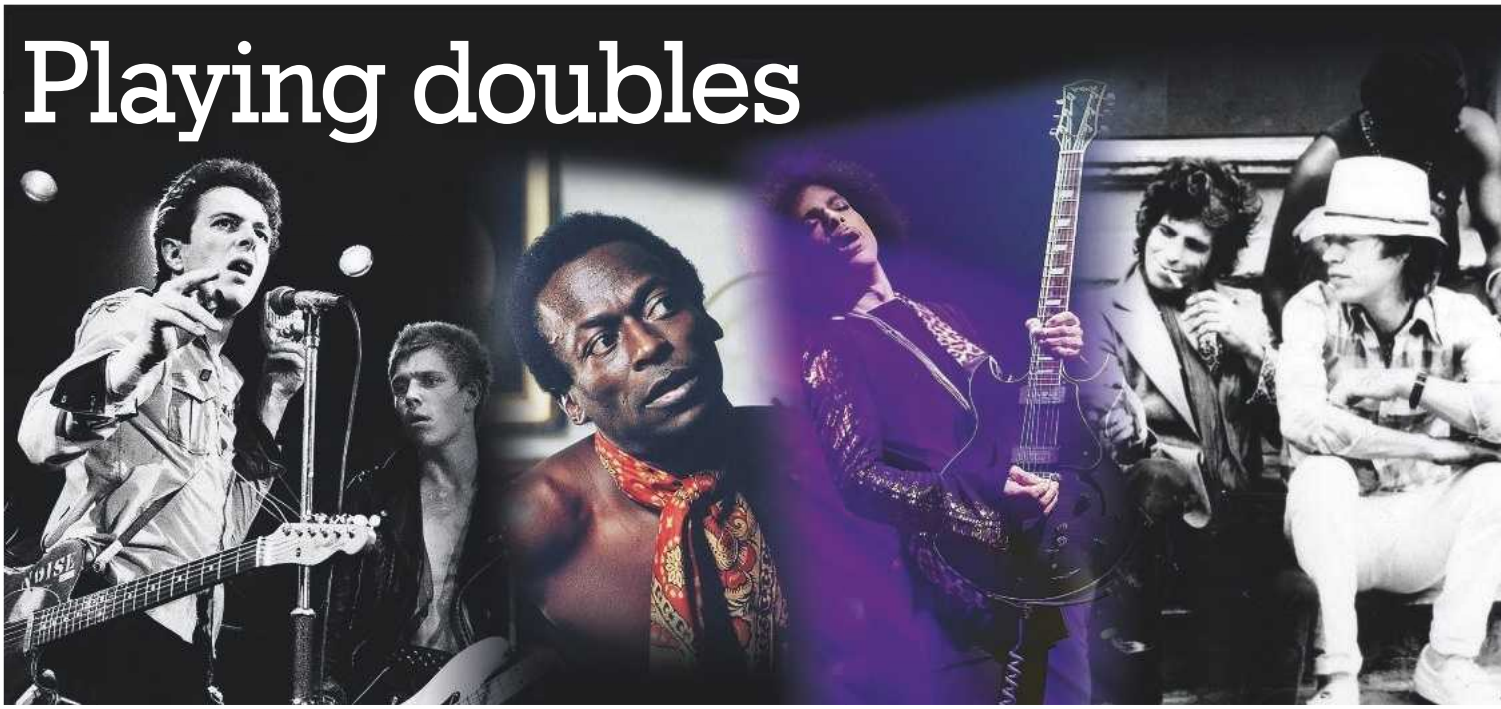
I've always maintained that someone with £500 and a good eye could leave the Audiojumble with a complete system to match something new for £1000. This Rogers Ravensbrook amp – new caps, RCAs, and binding posts – could be the start at £140, and it just begs to be paired with the Pioneer PL-11A turntable next to it, or the Denon DCD-1500 CD player behind it for £50. For audiophiles on a budget, used gear is a godsend.

More ultra-rare valve amps, this pair of early Rogers monoblocks deserves to be saved, restored and put in one of the hi-fi museums currently being mooted. These are Mk I Baby-De-Luxes, the unit at the front bearing the serial no. C404. They date from 1951/53, and output was 5W. Note the sockets to power a tuner and preamp.

Next month

HFN celebrates the best post-Covid Hi-Fi Shows!

Playing doubles



One artist, four sides of vinyl – and even a dual-pack CD or two... **Johnny Sharp** looks at the history of the double album and picks out sets that reward from beginning to end

It can often seem as if music critics cannot help but refer to 'quantity over quality' when reviewing double albums. While fans might love the avalanche of new music, it's perhaps an easy win for more sceptical observers to decide that the pick of the tracks therein could make 'a great single album'.

But even with classic single albums, there are very few you couldn't imagine benefiting from losing one or two of the most skippable tracks. With the best doubles, though, the overall breadth and depth of quality makes even the less memorable songs hard to dispense with, as they are punctuation points on a longer journey. Fans of either extreme of The Beatles' output, for example, might sit with gritted teeth through 'O-Bla-Di...' or 'Revolution 9' depending on their taste, but the absence of either would detract from one of the great landmarks of smorgasbord album-making.

AUDIO QUALITY

All but one of the LPs here are from before 2000, which reflects the fact that the very definition of the double LP hangs on the original idea of it being a collection of songs too long to fit onto a single vinyl disc without significant loss of audio quality. By the late 1990s, once CD became the dominant format, it didn't matter that your single album breezed past 60 minutes in length, so the double began to die out as a neatly defined concept.

And when the occasional double album arrived in CD format, both halves could be even longer. Either way, when artists are at the top of their game, with enough strong material to justify it, the double set is the ultimate feast for the ears.

SONIC YOUTH

Daydream Nation

(Blast First, 1988)

While many an alt. rock band of the '80s had felt hamstrung by punk-dictated rules of engagement, this New York quartet always had artsier avant-rock ambitions at heart, and they gave full vent to them on their first double LP, released on Blast First – a sub label of the one-time British independent company Mute Records. Unorthodox guitar tunings, lengthy instrumental explorations and coruscating noise sculptures were punctuated with punchy post-punk songs full of wry social comment, lysergic meditations and sci-fi dystopia. Here's where US indie left its self-imposed ghetto behind.

BOB DYLAN

Blonde On Blonde

(Columbia, 1966)

The best double albums are by artists who have not only become prolific in their output but have reached such heights of creativity that they have too much strong material to be accommodated in the usual album release schedule. Dylan was putting out LPs more than once a year at this point in his career, which gives you an idea of what a relentless composing machine he was. Among the tracks here were some of his career highs, too, such as the sublime 'Visions Of Johanna', 'Just Like A Woman' and the groundbreaking 'Sad Eyed Lady Of The Lowlands'. The first major rock double, and still a benchmark of quality.

GENESIS

The Lamb Lies Down On Broadway

(Charisma, 1974)

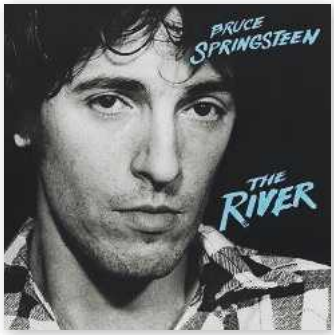
While other prog heavyweights were combining complex multi-part song suites with impenetrable lyrics and indulgent instrumental excursions, Genesis built a double album around relatively bite-sized parts, the songs 'Counting Out Time' and 'The Carpet Crawlers' even being released as singles. A surreal lyrical narrative was accompanied by four sides of dynamic and dramatically charged music that managed to pull the album's Pilgrim's-Progress-on-acid storyline along with it. 'You're in the colony of slippermen', sang frontman Peter Gabriel, 'there's no who, why, what or when'. Indeed.

JIMI HENDRIX

Electric Ladyland

(Track Records, 1968)

Once generations of teenagers got over *that* cover photo, they found that this 73-minute odyssey contained some of Hendrix's finest songwriting as well as the head-spinning guitar alchemy that first made him famous. He showed he was moving on from psychedelic pop and blues rock to funk, progressive soul and proto-metal, and, in 'All Along The Watchtower', left almost every other cover version in history sounding pedestrian.



BRUCE SPRINGSTEEN

The River

(Columbia, 1980)

With several tracks left over from his previous album, The Boss quickly added to them to create a follow-up… then he postponed its release. He wanted to add more yin to the yang that had prevailed thus far, resulting in key tracks such as 'Independence Day' and 'Wreck On The Highway'. Meanwhile, the title track of the album and the song 'Hungry Heart' epitomise the blue-collar yearning that perpetuates so many of Springsteen's finest moments.

PRINCE

Sign 'O' The Times

(Paisley Park, 1987)

We've naturally been saving the phrase 'purple patch' for the artist later known as, erm, 'symbol', because this double saw him really spread his wings. Here, Prince pitch-shifts his vocals with deliberate distortion ('If I Was Your Girlfriend'), throws in off-kilter funk grooves ('Housequake') and manic rock guitar solos ('I Could Never Take The Place Of Your Man') and offers lyrics as transgressive as ever, from the title track's social comment to gender-fluid themes.

OUTKAST

Speakerboxxx /The Love Below

(Arista, 2003)

Why make solo albums when you can put two on the same release and keep the group together? That's what Big Boi and Andre 3000 of Atlanta hip-hop duo Outkast did on a 134-minute double – the most successful of their career. Cast-iron bangers such as 'Hey Ya!' and 'The Way You Move' helped on that score, but Andre's eclectic songwriting on 'The Love Below' and Big Boi's consistently potent jams on 'Speakerboxxx' saw it also held up as a hip-hop landmark.

ROLLING STONES

Exile On Main St

(Rolling Stones Records, 1972)

While the glam era gathered pace across the channel, The Stones were ensconced in the south of France in tax exile creating a sprawling album of rock infused with all kinds of roll. Country, folk, soul, gospel and blues influences were writ large across 18 songs that subtly expanded The Stones' sound in career-defining fashion. 'Tumbling Dice' and 'Happy' would be the only 45s drawn from it, perhaps reflecting the fact this was an LP that effortlessly sold itself.

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S7t, Hi Fi News, April 2022

"Like its S7t sibling, it excels when it comes to mid and high details, resolving the most subtle of musical moments and nailing the feel and tone of instruments...It all sounded wonderfully three-dimensional."
S4b, Hi Fi News, June 2022

"For those who like to close their eyes during listening, the R7ts are heaven sent. Put another way: as Knopfler's Schecter Strat gave way to the piano toward the track's end, I started to well up. It really was that good."
R7t, Hi Fi News August 2022

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THE BEE GEES
Odessa
(Polydor, 1969)

It briefly split them up, but the Gibb brothers' sixth album turned out to be their finest hour in the '60s. Intended as a concept set based on the story of a 19th-century shipwreck, the brothers' talent for love-lorn melody won through, even with some ear-catching lyrical ideas at play, such as 'Marley Purt Drive's semi-comic tale of an overwhelmed dad and 'Never Say Never Again's deathless riposte, 'You said goodbye, I declared war on Spain'. We've all done it.

LED ZEPPELIN
Physical Graffiti
(Swan Song, 1975)

Given their notorious appetite for offstage excess, Led Zep still had enough focus to draw on several years' worth of song ideas to create arguably their last great career peak. Their peerless talent for nuggety riffs (see 'Custard Pie', 'The Rover' *et al*) was on plentiful show but so was Jimmy Page's penchant for acoustic folk ('Bron-Yr-Aur'), gnarly funk ('Trampled Under Foot') and in 'Kashmir', a brand of eastward-gazing symphonic prog rock that sounded truly canyon-shaking.

STEVIE WONDER
Songs In The Key of Life
(Motown, 1976)

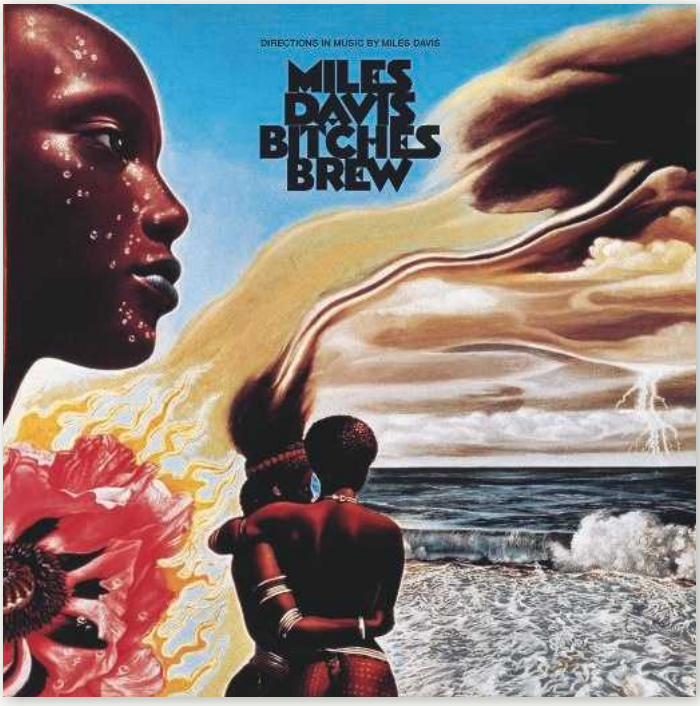
When referring to 'genius' we should use it as an adjective – a quality an artist achieves rather than a characteristic they are born with and will display for life. It's best employed to describe imperial phases such as Mr Judkins' early and mid-'70s output, which peaked with this stunning 104-minute *tour-de-force*. Timeless singles such as 'I Wish' and 'Isn't She Lovely' get streams by the multi-million these days, but gems of conscious soul such as 'Black Man' are equally arresting.

THE BEATLES
'The White Album'
(Parlophone, 1968)

Although actually The Fabs' first self-titled album, their only double will forever be known as 'The White Album'. As Lennon and McCartney competed to flex their compositional muscles, tracks as contrasting yet complementary as the sweetly sardonic 'Sexy Sadie', the incendiary 'Helter Skelter', the wilfully ear-eviscerating 'Revolution 9', pastiches such as 'Martha My Dear', and the soaring 'While My Guitar Gently Weeps', merely scratch the surface of the brilliance here.

MILES DAVIS
Bitches Brew
(Columbia, 1970)

While on the one hand the mercurial trumpet magician was breaking new ground by opening up fresh horizons for the burgeoning jazz-rock fusion genre, he also turned out to be innovative in other ways on this iconic release. Initially believed to be the result of long jams put straight onto record, it later emerged that the album's structure was largely created in the studio, splicing together grooves to create something even greater than the sum of its parts. Lithe, funky rhythms framed slippery piano and guitar motifs from a host of great players, but it was Miles's vision framing a timeless masterpiece.



THE CLASH
London Calling
(CBS, 1979)

Strummer, Jones and co had vocally subscribed to the year-zero philosophy of punk, vowing 'no more Beatles, no more Rolling Stones'. Yet here they managed to sound every bit the match of any traditional rock 'n' roll band, without losing the snarling rebel edge they had slashed their way out of West London with. Reggae, ska, rockabilly, folk, R&B, jazz and hard rock textures were taken in *en route*, with nary a failed experiment among them.

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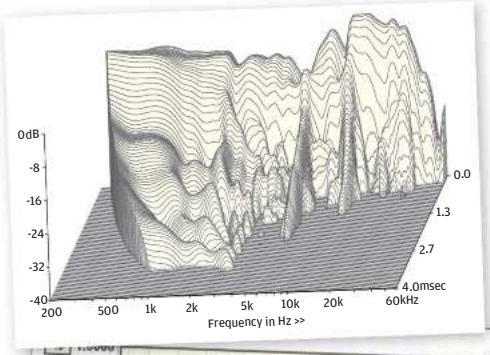
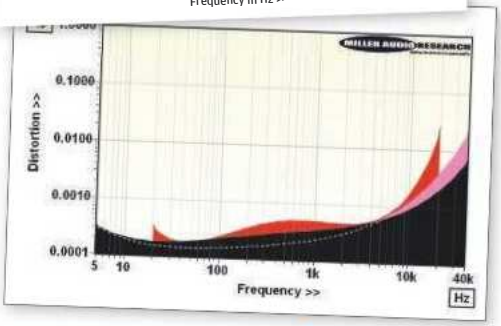
You hold in your hands the world's oldest and most respected hi-fi magazine – *Hi-Fi News* – where heavyweight audio engineering is our stock in trade. All our review products are typically subject to a one-month test process from shipping, unpacking, installation, photography, lab work, extended listening, disassembly/packing and collection. This practice was maintained right through the pandemic period, with full Covid biosecurity adding to the logistical complexity of our four-week issue schedule. But we did it... never missing one issue of the magazine or compromising the '*Hi-Fi News* Pledge':





1. Our hardware reviews are never brief 'hands on' experiences of a product from a press conference, brand-led demo or distributor's back room spun up into a four or five page article.

2. Products reviewed in *Hi-Fi News* already have secure distribution and retail channels in the UK. So readers *should* be able to arrange their own auditions if suitably inspired!

3. All review samples are shipped to and installed at our main facility. They are photographed by us (unless stock shots conform precisely to our template) and lab tested to a uniquely world-class standard before listening begins...

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LEFT: Innovative, research-based test & measurement – with exclusive colour 'data visualisation' – underpins every review in *Hi-Fi News*. In each issue you will discover performance-determining facts that are unique to our reporting

ABOVE: Conrad Mas [left], MD of AVID, and colleague Jacek lever the 100kg Reference Three all-alloy 'standmounts' into position. See p62 for our in-depth review

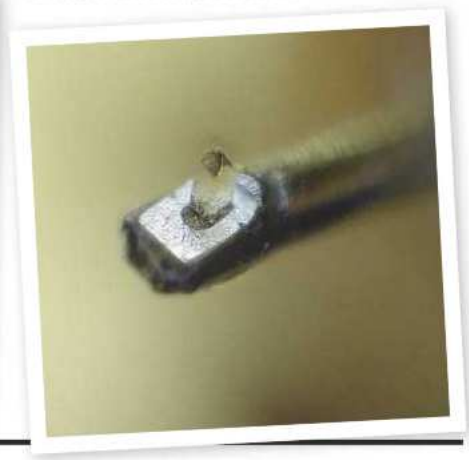
we do our research and we make truly independent evaluations. We do not release reviews to brands for 'fact checking' or other modification prior to publication. They read it when you read it.

5. Above all we respect our readers. You demand the best reviews informed by decades of experience, product knowledge and technical expertise. We endeavour to live up to that expectation.

IN THIS ISSUE...

LEFT: Only *Hi-Fi News* provides in-depth reviews of pristine vintage audio hardware, pictured and tested inside and out. Here's our sample of Technics' 'portable' SL-XP5 CD player from 1987, seen with the underside of the mechanism exposed [p120].

RIGHT: Not only are our reviews the most comprehensive available, but we also like to get 'up close' when testing the smallest of hi-fi components. Here's Clearaudio's 'Prime Line' stylus [p54].



Network-attached upsampler/DAC, outboard clock & headphone amplifier
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Supplied by: dCS Ltd
Telephone: 01954 233950
Web: www.dcsltd.co.uk; www.absolutesounds.com
Prices: £11,750 (Network DAC), £6750 (Clock), £8400 (Headphone Amp)

dCS Lina system

Aimed at very high-end headphone users, dCS's Lina Network DAC, Master Clock and Headphone Amplifier might also be the ideal compact system front-end for audiophiles
Review: **Andrew Everard** & **Paul Miller** Lab: **Paul Miller**

Headphone use has changed in recent years, from something to be endured through necessity to its own subset of hi-fi listening, with no shortage of ambitious and upmarket hardware currently available. Now dCS is on that bandwagon, for while it's been busy launching its APEX DAC technology for its 'full-size' offerings [*HFN* Jun '22] it's also developed the Lina, which is not so much a headphone amp as a complete playback system.

The 'stack' comprises the £11,750 Lina Network DAC, £8400 Lina Headphone Amplifier and £6750 Lina Master Clock, all three units housed in identically sized casework of remarkable quality and weight. Each is just 22cm wide in its black machined aluminium housing, with the weight hovering around 7kg per box. The compact industrial design is something of a departure for dCS, with the Network DAC's front-panel dominated by a large display, and that of the Headphone Amplifier by a big volume control and an array of output sockets – a standard 6.35mm unbalanced, plus balanced XLRs for stereo and separate left and right channels.

YOU CAN GO YOUR OWN WAY...

Both the amp and DAC can be used in isolation if so desired, the latter offering single-ended and balanced (XLR) outs to run into any amplifier you wish. The Headphone Amplifier has matching analogue inputs, plus a buffered option with an extra gain stage that's a little easier to drive. Again, it could be fed from any analogue source. And the Master Clock with its oven-controlled crystal oscillators? Well, that's to be used with the Network DAC, but could be used with other equipment featuring 44.1kHz or 48kHz-centric word clock inputs.

The Lina Network DAC does what it says on the box: it has an Ethernet connection to link it to the outside Internet world, and can play from local network storage as well as online services including Deezer, Qobuz, Spotify, Tidal and Internet radio. It also supports Apple AirPlay 2 via that network connection, and is Roon-ready. The generous range of digital inputs includes a USB-B for computer connection, plus USB-A for storage devices up to a suggested 32GB. Legacy inputs include optical and four electrical – two S/PDIF and two AES/EBU on XLRs.

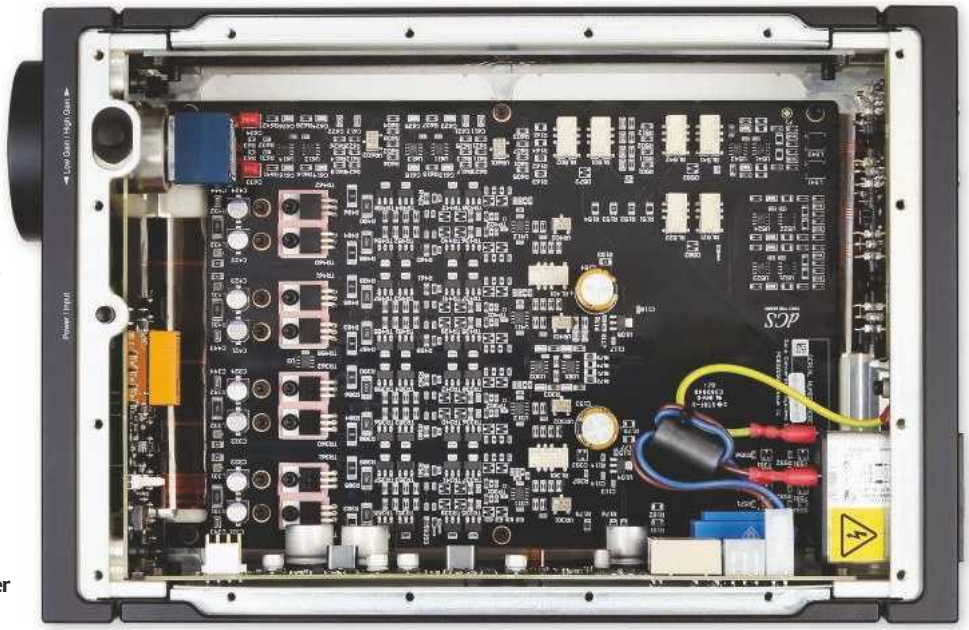
'The Mosaic app provides a smoother interface'

Depending on the input chosen, the Network DAC can handle file formats up to 384kHz/32-bit and DSD128, and offers selectable upsampling to DXD or DSD, plus a choice of two digital filters in PCM operation and four in DSD [see PM's boxout, p41]. There are also three crossfeed settings, achieved here in DSP rather than in the all-analogue Headphone Amplifier. The Network DAC has two extra RJ45 sockets to link all the units together for synchronised power on/off.

Streaming here is supported by the S800 platform from Vienna-based StreamUnlimited, dCS concentrating instead on the audio section of the Network DAC, which utilises its familiar RingDAC technology. The Lina unit runs the 'standard' iteration, rather than the new APEX RingDAC version rolling out across the company's other separates, but then the development of this headphone system predates its arrival. However, given the adaptable nature of dCS's designs, don't rule out the possibility of future upgrades… never say never!

ARTFUL CONTROL

Operation of the Network DAC is possible using third-party UPnP apps running on a smartphone or tablet, but the smoothest interface is provided by dCS's own Mosaic Control app [*HFN* Sep '19], available for iOS and Android. Not only does Mosaic allow the user to stream music from local and online sources, including Airable podcasts, it also lets you browse music across the range on offer, and handles configuration,



RIGHT: Inside the Lina headphone amplifier with ALPs volume pot [top left], switched gain [centre right], op-amp ICs [top and right], eight pairs of surface mount transistors [centre] and two pairs of 8A (ON Semiconductor) bipolars per channel [left] in the output 'power amp'

LEFT: **Milled alloy cases each include a screened toroidal PSU transformer. The DAC's glossy fascia/display has touch-sensitive 'buttons' for navigation but the dCS Mosaic app is slicker. Headphone amp [bottom] has 6.35mm, 4-pin XLR and dual 3-pin XLR outputs**

setting and operation of the Lina devices. You can really dig deep into the Network DAC's settings via the app, including the selection of upsampling and filter modes. There are neat touches too, like the ability to reassign three shortcut buttons on the app's homescreen – for input, PCM filter and crossfeed settings – to functions you think you're going to use most.

Though the easiest approach is to use this 'stack' as a complete 'just add cans' system, the modular nature of the set-up almost demands one looks at the various components – and more specifically the network player/DAC and the headphone amplifier – as standalone units. After all, the former has the makings of an intriguing streaming solution, while the latter is interesting as dCS's first all-analogue amplification product. Until recently, it had the combined streamer/DAC/headphone amp market covered with its £17,750 Bartók [*HFN* May '19], elements of which seeded the Lina [see PM's Lab Report, p43].

SIMPLY IRRESISTIBLE

That temptation to consider the Lina units as separates as well as a system proved too hard to resist, with the result that, as well as extensive listening to the stack with a variety of headphones, the Lina Network DAC also saw service as a streaming front-end for my main system, in which role it proved itself to be highly accomplished.

As ever, the choice of filter setting when using the upsampling facility of ⇨

QUARTS INTO PINT POTS

It's easy to overlook that the Lina Headphone Amp is dCS's first 'all analogue' product, and one not short on bipolar silicon with its directly-switched and op-amp buffered inputs feeding a 20kohm ALPs volume control, also with its own IC op-amp gain stage. The main amp includes high/low gain (the two relays are visible in the centre of the pic, p40) preceding a host of discrete devices for the biasing and drive circuit, the latter feeding a beefy, complementary output. Switchmode regulation is employed for this main power amp with linear regulators for the input/line stages.

By contrast, the Lina Network DAC is a version of the Vivaldi/Bartók, production-engineered into a new form factor on a 'flex-ridged' PCB (multiple, ribbon-connected boards). The digital filters are all linear phase types, varying principally in tap/coefficient length, trading response and stopband (alias) rejection against distortion/ringing in the time domain. This includes those deployed in the Lina's 'DSD mode' where the processing is executed in LPCM before the resampling/format conversion to a single-bit DSD stream. For its flagship DACs, dCS offers a maximum of six digital filters and while the same underlying code is embedded into the Lina, only two of these are user-accessible as 'F1' and 'F2'. We've already explored these filters in our Lab Reports for the Vivaldi One [*HFN* Feb '18], Bartók [*HFN* May '19] and Vivaldi APEX [*HFN* Jun '22] – it seems the Lina's 'F1' is equivalent to the Vivaldi/Bartók 'F1' but the Lina's 'F2' is the Vivaldi/Bartók's slow roll-off linear phase 'F4'.

Possibly, dCS might choose to enable the Vivaldi/Bartók filters F2, F3, F5 (minimum phase) and F6 within the Lina at some future date, but that's just supposition on my part. Similarly, it could also update the RingDAC's mapping to align the Lina more closely with the latest APEX upgrades. None of this is a block to purchase *now* because any future revisions would be achieved 'over air' via the network. PM

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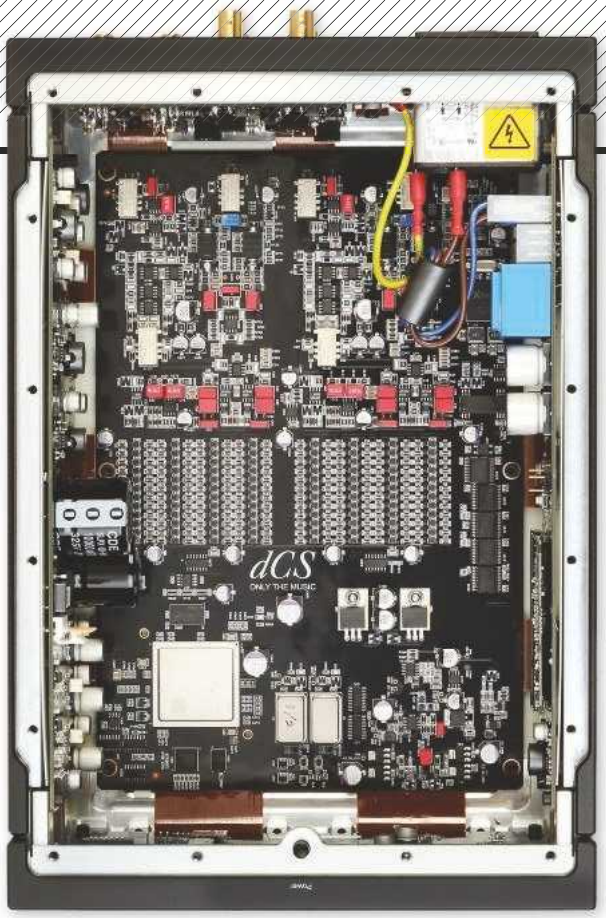


LEFT: The Lina network DAC employs a StreamUnlimited 800 series platform [right, sidewall]. More familiar, the 96 current sources (a 2x48 matrix) that comprise the RingDAC core [centre] are addressed via a Xilinx Artix-7 FPGA [lower left]. Note also the 48kHz/44.1kHz clocks [bottom]. Fully balanced, mixed op-amp analogue output [top] has its own regulated PSU

the Network DAC is going to be a matter of personal preference. After some experimentation I was unable to come up with a convincingly consistent preference but typically settled on F2 when using the DXD upsampling, before sticking to DSD conversion with the default F1.

Of rather more concern was that harnessing the Network DAC to the Master Clock failed to elicit any significant uplift to what was already a superb sound. Yes, perhaps there was a minimal increase in focus with the add-on clock in use, but the internal clocking of the DAC seemed already to be doing an excellent job…

> 'The tripping percussion was delivered impeccably'

But first the headphone experience, and whether playing DSD files from my NAS or simply streaming Internet radio, upsampling the 320kbps stream to DXD, the Lina system proved an exceptional listen, especially with highly revealing headphones like the Oppo PM-1 planar magnetics [*HFN* Jul '14]. Playing the recent Houston Symphony Orchestra/Orozco-Estrada 'EP' release of Leonard Bernstein's *West Side Story Suite* [Pentatone PTC5187014; DSD64], the combination of the clarity and the crispness of the Network DAC and the Headphone Amplifier's weight and punch proved both thrilling and totally compelling.

SETTING THE STAGE

There's some serious power here, even with demanding 'phones like the PM-1s, revealed in the great lyrical sweeps of the music and the taut rhythms of the 'Mambo' and 'Cha-Cha' sections. Dial in a little of the crossfeed available via the DAC, and it's possible to create a very 'un-headphone-like' sound, with all the spaciousness of listening to good speakers, from the slam of the rich bass to the sense of a soundstage spread before you.

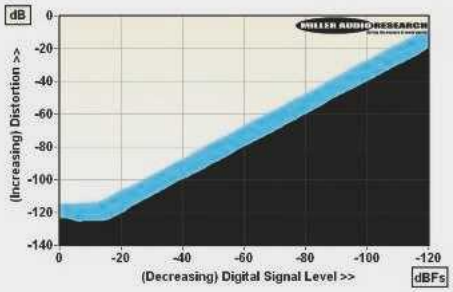
With the much more relaxed tones of the Philip Clouts Quartet's 'Nine Tales' from the 2010 *Sennen Cove* album [Point Records PCD025], there was a lovely sense of space and ease about the presentation via these dCS components, every note of Clouts' piano crystal-clear against the restrained bass and drums, while the sax had a solid presence amidst the soundstage. I came to this album having just heard a variation of this group from a front-row seat in a small jazz club, and the effect the Lina package delivered, whether

LAB REPORT

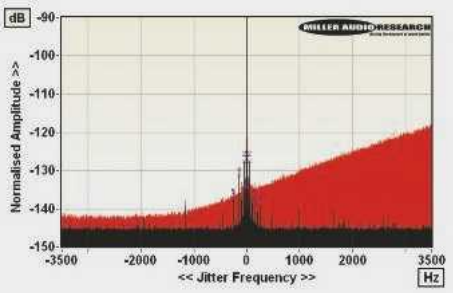
DCS LINA NETWORK DAC

There are four key variables in the Lina DAC's operation that need exploring, starting with the 0.2V, 0.6V, 2V and 6V output modes in the device settings menu. The latter pair amount to 2.05V and 5.91V, offering A-wtd S/N ratios of 109.1dB and 117.0dB, respectively, all from a usefully low 1.0ohm balanced source impedance. There's a little extra stress on the output at 6V so THD is just fractionally higher here at 0.0001-0.00025% [see Graph 1, below] vs. 0.00009-0.00017% at 2V output (all re. 0dBFs, 20Hz-20kHz), but this is of academic interest only. Distortion falls to a minimum of 0.00003% over the top 20dB of its dynamic range – lower than achieved in the dCS Bartók [*HFN* May '19] and jitter [see Graph 2] remains super-low at ~20psec.

Two digital filters come with the DXD upsampling mode in the processing menu, 'F1' being a steep roll-off linear phase type that offers a fine 123dB stopband rejection and very flat response of ±0.01dB/20Hz-20kHz with 48kHz media, extending to –0.1dB/40kHz with 96kHz files before cutting off slightly early to reach –22dB/45kHz. 'F2' is a slow roll-off linear phase filter with reduced time domain distortion (ringing) but also a reduced –7.3dB stopband rejection and increased aliasing IMD. It looks to be equivalent to 'Filter 4' in the dCS Bartók where the response also rolls away more 'softly' to –3dB/36kHz and –10.4dB/45kHz (96kHz media). With DSD64 resampling, the swell of ultrasonic requantisation noise is 'managed' in the Lina by four alternative filters, F1 to F4. These are all linear phase filters applied *before* DSD conversion with –3dB limits set at 78kHz, 68kHz, 64kHz and 28kHz, respectively. The impact of DSD resampling is easily illustrated by the 96kHz jitter spectrum [red trace, Graph 2]. **PM**



ABOVE: Distortion versus 48kHz/24-bit digital signal level over a 120dB dynamic range (black, 1kHz; blue, 20kHz). Note extended 0dB to –140dB Y scale



ABOVE: High resolution 96kHz/24-bit jitter spectrum with F1 filters (DXD upsampling, black; DSD, red)

HI-FI NEWS SPECIFICATIONS

Maximum output level / Impedance	5.89Vrms / ohm (XLR out)
A-wtd S/N ratio (USB / Network)	117.0dB / 117.1dB
Distortion (1kHz, 0dBFs/–30dBFs)	0.00011% / 0.00013%
Distortion & Noise (20kHz, 0dBFs/–30dBFs)	0.00025% / 0.00045%
Freq. resp. (20Hz-20kHz/45kHz/90kHz)	+0.0 to –0.0dB/–0.dB/+0.dB
Digital jitter (48kHz / 96kHz)	21psec / 10psec
Resolution (1kHz @ –100dBFs/–110dBFs)	±0.1dB / ±0.2dB
Power consumption	22W (1W standby)
Dimensions (WHD) / **Weight**	360x320x530mm / 9kg

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LEFT: Lina DAC [top] includes LAN, USB-B and USB-A (DSD128/384kHz), dual-AES (384kHz), 2x coax (192kHz) and opt (96kHz) inputs. Analogue outs on XLRs and RCAs are joined by Word Clock inputs for connection to the Lina Master Clock [centre]. The Lina Headphone Amp [bottom] has direct (RCA/XLR) and buffered (XLR) inputs. All three Lina components may be sync'd via dCS's 'Power Link'

via headphones or with the Network DAC running into my amp and speakers, was entirely persuasive.

Not that you need to go for subtle jazz to hear the abilities of the Lina system in action. With the bombast of Muse's *Will Of The People* [Helium 3/Warner Bros 0190296383731], complete with operatic histrionics, buzz-saw guitars and pounding rhythm section, the sound was opened up wide for inspection. Without any restraint being applied, the touching 'Ghosts (How Can I Move On?)' and the driving 'Euphoria', with its charging synths and big choruses, blossomed into their own, distinctive acoustics.

UP TO SCRATCH

The Headphone Amp consistently delivered a big, bold high-energy sound entirely suited to the grand visions of Matt Bellamy's little band. However, just be careful with the volume control or your ears may well succumb to the fate promised in the final track!

Mind you, that focused sound was just as well suited to the skanking rhythm of Junior Murvin & Jah Lion's 'Police And Thieves' from Lee 'Scratch' Perry's *King Scratch* compilation [Trojan/BMG TJDCD605], the deep dub bass and tinkling, tripping percussion delivered impeccably to underpin the vocals.

What's more, with the Network DAC upscaling to DSD into my main system, even those live BBC Proms relays sounded suitably open and atmospheric. The BBC Symphony Orchestra performance of Holst's *The Planets* benefitted from the muscular delivery and tight handling of rhythms, while the ethereal sound of 'Neptune' – with the voices of the BBC Symphony Chorus fading into the Royal Albert Hall acoustic – luxuriated in the sheer resolution on offer here. It's a scintillating sound, whether played through a large system or – courtesy of BBC Sounds – experienced through the Headphone Amplifier.

HI-FI NEWS VERDICT

The price of the complete Lina stack is a head-turner, so it makes more sense if you view the components as separates, and build accordingly. The Network DAC is the star here, and will surely find a role in high-end streaming systems, while the Headphone Amplifier is mighty powerful, and will drive the most demanding of 'phones with real conviction. And the Master Clock? Well, you pays your money…

Sound Quality: 89%

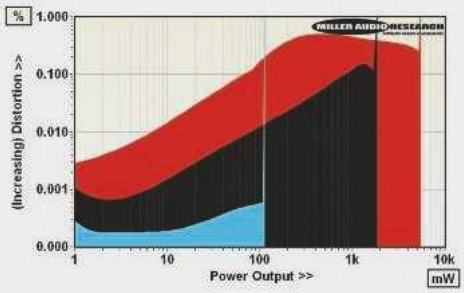
0 - - - - - - - - - 100

LAB REPORT

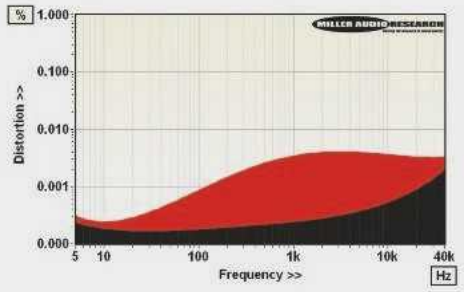
DCS LINA HEADPHONE AMP

While the Lina DAC clearly inherits a deal of technology from the Bartók [*HFN* May '19], the Lina Headphone Amplifier is substantially more capable than the Bartók's integrated Class A preamp. There is some commonality, including the usefully low ~0.7ohm single-ended output impedance, but this is a function of good design practice as much as shared topology. Either way, it ensures there's a minimal 0.16dB signal loss into a 32ohm headphone load with a similar resilience over the system (amp/headphone) frequency response. The Headphone Amplifier's native response is almost unaffected by loading, running flat to within a tight ±0.1dB (20Hz-20kHz), falling slightly thereafter to –2dB/100kHz, while the residual noise is low at –90dBV and the A-wtd S/N a solid 96.2dB (re. 0dBV) via the SE output.

Distortion *is* influenced by loading, however, from a mere 0.00007-0.0005% (20Hz-20kHz) into high impedance loads to a slightly higher (but not 'high') 0.0003-0.004% at 10mW/32ohm via the SE output [red trace, Graph 2 below]. Two levels of gain are offered, amounting to +0.6dB (Low) and +11dB (High) via the standard XLR input. Input headroom is in excess of 12V, but the gain settings do influence the Lina's maximum output which is 760mW/32ohm in 'Low' and 1850mW/32ohm (1.85W) in the 'High' setting. Maximum output into high 600ohm headphones is 110mW while the complementary power amp [see pic, p43] has sufficient current to support a huge 5.4W into very low 8ohm loads [see Graph 1]. This Graph also confirms the steady increase in distortion when driving lower loads from 0.0002%/10mW/600ohm to 0.0015%/10mW/32ohm and 0.015%/10mW/8ohm [blue, black, red traces, respectively], though these figures are still well below that of a typical headphone. **PM**



ABOVE: Power output vs. THD into 600ohm (blue), 32ohm (black) and low 8ohm (red) headphone loads



ABOVE: Distortion versus frequency from 5Hz-40kHz (0.6V unloaded, black; 10mW/32ohm, red)

HI-FI NEWS SPECIFICATIONS

Maximum output (<1% THD) / **Gain**(s)	8.4V (SE) / +0.6dB / +11dB
Power output (<1% THD, 600/32/8ohm)	110mW / 1850mW / 5400mW
Output Impedance (20Hz-20kHz)	650-730mohm
A-wtd S/N ratio (re. 0dBV/32ohm)	96.2dB / 95.9dB
Distortion (20Hz-20kHz, 0dBV)	0.00007–0.0005%
Distortion (20Hz-20kHz, 10mW/32ohm)	0.0003–0.004%
Freq. resp. (20Hz-20kHz/100kHz)	+0.0 to –0.1dB/–1.95dB
Power consumption	8W (1W standby)
Dimensions (WHD) / **Weight**	360x320x530mm / 9kg

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AUDIO FILE

Lowther Almira

One-time royalty of the horn-loaded full-range driver, Lowther is reclaiming its crown. We hear the 'princess'
Review: **Ken Kessler** Lab: **Paul Miller**

Although I am no devotee of horns, I adore two of the genre's specialists, Lowther and Klipsch, and recall the delights of the former's Bicor and Acousta. But I had thought Lowther had joined other defunct brands until I met Martin Thornton in late 2019, at the last pre-Covid Tonbridge Audiojumble. I was overjoyed to hear that he had acquired the company's remnants, designs, name and everything else needed to relaunch it [see boxout, p47]. Three years on, and he's arrived with an all-new Lowther, dubbed the Almira.

After discovering that Jimi Hendrix's London abode was previously the home of George Frideric Handel, and Jimi owned Lowther Acousta 115s, inspiration struck. Both giants are honoured by the Almira, by sharing a name with the principal character in Handel's first opera. I guess it works better than calling it 'Foxy Lady', 'Fire', or 'Purple Haze' from Jimi's first LP.

'Transients were as hot as you'd want them to be'

CABINET MEETING

There's an introductory price for the speakers of £12,000 per pair, rising to £19,920 – a large proportion of the cost is in the cabinetry, but this isn't merely a penalty for a stunningly veneered enclosure. Price will vary according to finish, both standard and luxury levels, with other woods including Olive, Australian Gum Walnut or Zebrano. The Almira sits below the top model in a range of five current speakers, the corner-horn TP2 above it, while both the new and 'Heritage' designs are complemented by a wide selection of raw drivers and blueprints for those who wish to build their own.

It is the cabinet's complexity which accounts for the outlay. Inside the Almira is a 2.3m folded horn, opening into the room at the base. The horn's path is convoluted, Thornton explaining that constructing an Almira cabinet is so labour-intensive that it takes six weeks to make each one.

At the front and top of the baffle are the DX3 'full-range' driver and above it a 20mm dome supertweeter, protected by a grille which completes the sculpted, faceted look. The grille is optional, but I think the speaker looks odd without it. My own tastes aside, at 1200x300x330mm (hwd), two Almiras are not going to disappear in, let alone blend into, any room which is less than cavernous.

PHASE AND MEANS

Those with past experience of Lowther drivers will note the absence of the phase plug in the centre of the 200mm, treated-paper-cone DX3. The correction is now achieved, says Thornton, via the Lowther Phase & Frequency Response Compensation Board (LPFRCB) which can be retrofitted to existing Lowther drivers. According to Lowther, the LPFRCB 'electrically balances the inherent rise in efficiency at the upper midrange of Lowther speaker units', but see PM's Lab Report, p49.

The DX3 itself has undergone slight modifications to surface treatment, with the LPFRCB employed 'to tilt the frequency response and match the baffle compensation/bass efficiency to the overall cabinet design'. The driver attempts full range coverage, while the Almira's supertweeter is protected below about 8kHz by a high-quality capacitor.

Setup is simple but critical: high sensitivity means no need for vast amounts of power, nor the ability to drive difficult loads, and connection is easy via the speaker's single set of multi-way binding posts. Positioning, however, is the key to making the experience pleasant, finding the perfect toe-in for the best relationship between ears and the tweeter axis. As

RIGHT: Available in five standard and seven premium wood finishes (plus the limited edition Rosewood pictured here), the tall birch plywood cabinet plays host to a 200mm treated paper DX3 'full-range' driver/whizzer unit and 20mm dome supertweeter behind a tapered horn

A BRITISH TRADITION

Fans of Lowther are aware that the last few decades were marred by less than stellar customer relations, erratic supplies, and other woes which challenged even the most fervent of devotees. As Lowther nears its 90th anniversary, it is to the delight of its legions of fans that the company is now back under sympathetic ownership. It was 1934 when Paul Voigt, the 'godfather' of horn speakers, met O P Lowther, the two combining forces with the goal of building the finest audio equipment available. After WWII, Donald Chave, formerly Lowther's chief engineer, bought the company. Voigt emigrated to Canada, but with agreement that Chave would produce the Domestic Corner Horn speakers under licence, and this would become the foundation of the brand.

Under Chave's aegis, Lowther produced complete speakers in enclosures, drive units for purchase by DIY clients, amplifiers, and tuners. In 1970, Chave entered into a partnership with friend Roy Hopps, remaining with the company through its changing fortunes until his death in 1982. Lowther ceased trading in 2018 and Martin Thornton acquired the business, his ambition to restore the brand to its former glory with the aid of several Lowther enthusiasts including horn speaker authority John Howes. Best of all, it remains resolutely British.

you'll discover, the Almira is both bright and in its current guise, bass-light.

HIGH IMPACT

Effortless sound, that vast expanse of a soundstage, lightning-fast transient attack – there was no mistaking those elements of the classic horn sound as an essential part of the Almira experience. The spread across the room of Lou Rawls' 'At Last' [Blue Note CDP 7 91937 2] was as good an indicator as any of high-end potential, despite the odd nature of the soundstage being slightly above listener level.

While I could raise my seat, there was no escaping the impact of the initial burst, Lowther's Almiras proving bright enough even to assault my aged ears. At first, I thought it just might be my own bias, that crotchety part of me which believes all horn-loaded speakers are shouty. But it was indisputable. Here was a speaker of no mean dimensions yet lacking weight to its sound, and a distinct tilt toward treble dominance. And that was with an all-valve amplifier.

Rawls' and Dianne Reeves' voices retained much of their correct textures, hers clear and his raspy, but the absence of deep bass created an imbalance. It was more like listening to a small two-way speaker, despite ample levels which would destroy such systems. Yes, these go loud, but even with plenty of volume in hand I didn't even bother to try and see how far I could go. It reminded me why horns were the default choice for cinemas back in an era when 5W amplifiers were considered powerhouses.

What caused enough concern to make me question the voicing of the Almira was the Platinum SHM CD of Blind Faith's lone, self-titled album [Polydor Japan UICY-40013]. As trivial as this may seem, it was the simple cymbal crash that punctuates 'Can't Find My Way Home', a specific crunch which sounded papery rather than metallic. That version of *Blind Faith* is one of the best I've heard, and my trusty Marantz CD12/DA12 in balanced mode is as sweet as CD sound gets. Not this time.

Covering the supertweeter to see if it was responsible merely proved that it added little to the sound. The edginess came from the main driver, making me wonder if the phase plug should be returned to its rightful place, and the LPFRCB removed. One suspects that Chave, Voigt and the rest knew exactly what they were doing a few lifetimes ago.

HELPING HAND

Among the amps in my collection is PMC's COR integrated, useful in this instance as it has tone controls that can be defeated from the hot seat via remote. With a listening panel of seasoned audiophiles, we played with the bass and treble, boosting the latter while reducing the former to a point we all agreed sounded flatter than the Almira *au naturel*.

There are no numerical graduations on the COR's sliders, nor did I have a spectrum analyser to hand, but the reduction in treble was over a third of the way down, while the bass boost was 40% up. A/B-ing

LEFT: The DX3 unit is loaded through a folded, unattenuated 2.3m-length quarterwave generic Voigt horn that vents out the base of the cabinet. The Almira is not especially heavy at 27kg but there are no stabilising outriggers here – just an adjustable foot at each corner of the plinth

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LEFT: The most basic of 'crossovers' – a protective capacitor for the tweeter – means the Almira needs only one set of 4mm banana/cable inputs. An engraved plate carries each speaker's serial no.

between the two, with the soundstage and transient attack unaffected, confirmed that the Almira needs its sound balance tilted toward more bass and less treble.

One of the most revealing albums in my arsenal is the open-reel tape of *The Best Of Doc Severinsen* [Command/ABC L952]. Severinsen was the band leader for Johnny Carson, the TV host whose *Tonight Show* ruled US television from 1962 to 1992. Severinsen handled the baton from 1967, and this collection dates from 1970 – late-ish for a tape and mine is in mint condition – and it positively sings on a fully-serviced Revox A77 Mk IV.

Why this tape? Because Doc plays trumpet, and I knew it would reveal as much as anything I could feed the Lowther Almiras. As with Herb Alpert albums, his arrangements of 'Fever', 'Monday, Monday' and other standards or hits-of-the-day are big band interpretations which use the entire bandwidth of a system.

As expected, the Almiras had no trouble conveying the crisp, sharp staccatos on the livelier tracks, such as 'Trumpets And Crumpets', the undeniable speed of the transients as hot as you'd want them to be. When the music turned slow and moody, however, the lack of deep, massive bass deprived the kettle drums on 'Fever' of their weight and presence. It was frustrating, because I heard so much of the old Lowthers in there, waiting to escape.

LOOKING FORWARD

A better performance came with Confederate Railroad's eponymous debut [Atlantic 82335-2], one of my favourite 'modern country' albums (although it's now 30 years old). 'Trashy Women' lilted along, as sardonic as ever, the pedal steel crystal clear. And why this venerable album? Because what I unfashionably call 'redneck bass' is about twang, not bulk, and it did nothing to embarrass Lowther's Almira. But I do look forward to a more balanced sound, so I'm gonna treat this review as a beta test.

HI-FI NEWS VERDICT

PM summed it up succinctly: the Almira is 'a work in progress'. This is not a criticism but an observation based on accepting that Lowther is still undergoing (re)birth pangs. Many elements of Lowthers of yore remain: stunning soundstage, sensitivity that invites the use of SET amps, a cabinet best described as 'fine furniture'. All that remains is the voicing, to regain that vintage Lowther warmth.

Sound Quality: 70%

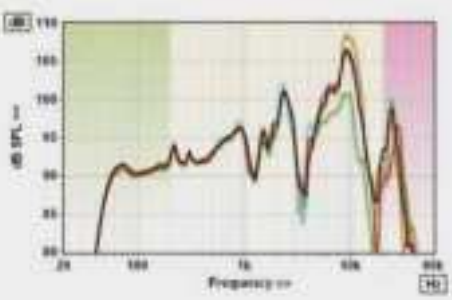
0 - - - - - - - - 100

LAB REPORT

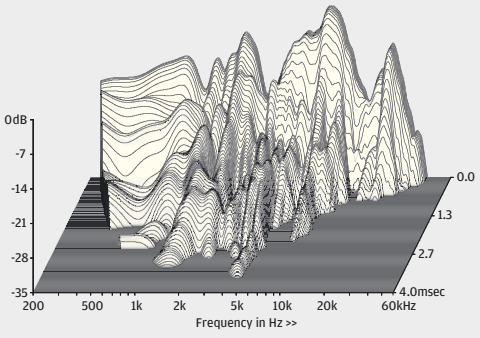
LOWTHER ALMIRA

Although the Almira is notionally a two-way, the minimalist crossover on the supertweeter arm (a single capacitor) ensures it behaves more like a 'full range' single driver enclosure with supplemented upper treble. Measured midway between the DX3 and tweeter the forward response [Graph 1] shows a significantly upturned trend with 'emphasis' at 900Hz, 2.4kHz and 9kHz (and the ultrasonic tweeter at 27.9kHz). The response errors are a huge ±13dB and ±10dB, respectively, only mildly exaggerated by the frame grille [blue trace], but the pair matching is a far tighter 1.7dB (200Hz-10kHz). The high treble extension is limited to 15.5kHz (–6dB re. 1kHz), but listen on the tweeter axis for a *reduced* treble [green trace] because the DX3's axis delivers the brightest output [orange]. In the bass, the folded quarter-wave 'Voigt horn' is tuned to 54Hz, and the DX3's 70Hz/–6dB roll-off stretched to a corrected extension of 45Hz (–6dB re. 200Hz).

Sensitivity is high but response errors influence the absolute figure: 95.4dB (1kHz) or 96.6dB (500Hz-8kHz), the latter more subjectively relevant. This is not achieved at the expense of a tough amplifier load as its impedance phase is largely benign above 200Hz (+6°/–30°). The minima of 10.7ohm/183Hz and gentle droop to 6.3ohm/20kHz – the latter with less influence in practice – are joined by 'gentle' EPDRs of 3.8ohm/16.4kHz and 4.4ohm/152Hz. However, both impedance/phase spectra reveal numerous resonances at 213Hz (quarterwave), 300Hz, 475Hz and 635Hz plus smaller modes extending up to 5kHz, the former also picked up on the nearfield response [see Graph 1]. The CSD waterfall [see Graph 2] is equally... colourful! **PM**



ABOVE: Resp. inc. nearfield driver/port, freefield corrected to 1m at 2.83V [yellow], ultrasonic [pink]. L, black; R, red; grille, blue; DX3, orange; tweeter, green



ABOVE: Cabinet modes are well controlled but the DX3 driver/whizzer shows extended breakup to 10kHz

HI-FI NEWS SPECIFICATIONS

Sensitivity (SPL/1m/2.83V – 1kHz/Mean/IEC)	95.4dB / 96.6dB / 93.0dB
Impedance modulus: minimum & maximum (20Hz–20kHz)	6.3ohm @ 20kHz 158ohm @ 89Hz
Impedance phase: minimum & maximum (20Hz–20kHz)	–69° @ 109Hz +63° @ 26Hz
Pair matching/Resp. error (200Hz–20kHz)	6.5dB/ ±13.1dB/±10.0dB
LF/HF extension (–6dB ref 200Hz/10kHz)	45Hz / 12.1kHz/12.05kHz
THD 100Hz/1kHz/10kHz (for 90dB SPL/1m)	1.0% / 0.6% / 0.25%
Dimensions (HWD) / **Weight** (each)	1200x300x330mm / 27kg

Pre/power amplifier. Rated at 110W/8ohm
Made by: Exposure Electronics Ltd, Lancing, UK
Supplied by: Exposure Electronics Ltd
Telephone: 01273 423877
Web: www.exposurehifi.com
Price: £1590 (each)

Exposure 3510 pre/power

Replacing the outgoing 3010 series with trickledown experience from the costlier 5010 range, Exposure's 3510 stable just got busier with the launch of a new pre/power

Review: **Mark Craven** Lab: **Paul Miller**

Who remembers the Stella Artois ad that proclaimed its lager was 'reassuringly expensive'? A slightly odd slogan, if you ask me, but it came to mind when setting up Exposure's 3510 pre/power pairing, only substituting the word 'expensive' for 'simple'. Here are two hi-fi products where simplicity has been elevated almost to an art form, reflected in the casework, choice of connections and user experience. And at £1590 a piece, these recently launched models aren't outrageously expensive.

The 3510 series occupies the UK-born marque's midrange position, above the 2510 and below the flagship 5010 models [*HFN* Nov '18], and replaces the 3010 line launched around a decade ago. In the 2510 camp there's currently just a single option, the £1750 Integrated Amplifier, while the 5010 series has a preamplifier (£2000) and monoblock (£5500-per-pair). The 3510 range, however, is four-strong, adding a mono power amplifier [see p24] and integrated [*HFN* Nov '21] to the duo tested here. The series remit is 'accuracy and power you would never expect'.

BEEF INDUSTRY

That Exposure's 3510 components, available in either black or titanium finish, look very similar to models that have come before will be no surprise to seasoned audiophiles – the company has long adhered to a classic, understated style. Indeed, this is a point of pride, Exposure saying its aim is 'a simple yet stylish system that brings your cherished music collection to life, not one that looks garish'.

Certainly, both pre and power amp are more elegant than in-your-face, with a cool lower-case brand logo and pin-prick LEDs gracing the smart fascias. They're a match in width (440mm) and depth (300mm) – the 3510 amp is bulkier, at 115mm tall versus the preamp's 90mm, but still appears fairly svelte. Decent-sized feet give enough clearance to stack the two units without worrying about ventilation.

The 3510 Stereo Power Amplifier is rated by Exposure at the same 110W/8ohm as its 3510 Integrated amplifier, but both are beefier in practice [see PM's Lab Report, p53]. Inside, a custom toroidal transformer and linear power supply accounts for much of the unit's 12kg heft, supporting a power amp based around Exposure's favoured Toshiba bipolar transistors and sprinkled with 'high-quality' signal path capacitors. Two sets of 4mm speaker sockets are fitted [see pic, p53] for loudspeaker bi-wiring and also bi-amping should you wish to pair a 3510 Integrated with a 3510 Stereo Power Amplifier.

> 'The fast-paced rock sounded lively and exhilarating'

The 3510 Preamplifier, in its base form, features line-level inputs only. There are five in total, one labelled Phono/Aux and ready for MM/MC phono use if you plump for one of Exposure's optional phono stage modules [see boxout, p51], the others being CD, Tuner, Aux and AV.

ON THE TRACKS

The latter, fixed gain input bypasses the volume control should you wish to use it with the preamp output of a multichannel receiver in a home cinema system. Nestling right next to these are two unbalanced RCA pre outs, plus a tape loop and ground terminal.

Inside the 3510 Preamplifier, Exposure says it has optimised the input switching and track layout of its PCBs to reduce crosstalk between channels and inputs. Discrete transistors are employed in the line stage, while a so-called 'hybrid' power supply, with custom toroidal transformer, has been engineered for very low levels of residual noise.

Casework is all aluminium, with extruded front panels said to help

RIGHT: Derived from the 3010 series, the 3510 power amp features two pairs of Toshiba power transistors per side [on internal heatsink, centre] and fed from a beefy toroidal transformer [left]. Amp PCB is underneath the PSU PCB [right]

resonance control and limit stray EMI. There's nothing on the front of the power amp but a power button to bother you, and neither is the 3510 Preamplifier especially cluttered, with selector and volume controls either side of a row of LEDs that light up to show the selected input. There's no text-heavy display to learn here, nor any amount of user tweaks. It's that simplicity thing again.

Meanwhile, the supplied remote control [see p53] will function with all Exposure products, including its small form factor XM Series, which includes a top-loading CD player/transport. The manual says you might find the product coming with either an HS3 or HS5 handset, but it's only the latter that's now being shipped. This has been redesigned and looks slightly more modern than the HS3. It's necessarily packed with buttons, but you'll only need to use it for source selection, volume and mute with the 3510 Preamplifier.

One criticism is that the volume keys, which send the preamp's motorised control gently in motion, could do with being larger. Otherwise, operation of both 3510 amplifiers is a doddle, with only a brief delay while output relays kick-in from boot-up to get in the way of a listening session.

JAZZ SINGER

While the 3510 Stereo Power Amplifier could be used separately with other system components, and I don't doubt its ability here, it's clearly intended to work with the 3510 Preamplifier. And when these join forces, there's a synergy that's delightful. The system sound combines power and aggression with vivid imaging, subtle tonality and sweet highs. It makes you want to double-check the price tag.

For example, it takes quite a lot to make me listen to contemporary jazz with anything but a scowl, but these 3510 models have it. The Neil Cowley Trio's 'Bryce' [*Touch And Flee*; Naim Jazz NAIMCD206] offered so much to admire, particularly a wide-open soundstage that still had defined instrument locations, and a counterpoint between softly pressed piano keys and double bass strings struck with force. The four-minute track flew by, drowning me in textures.

Don't let the sedate aesthetics fool you – these 3510 amps took control of both my regular B&W 705 S2 standmounts, and System Audio's slim but not appreciably sensitive saxo 40 floorstanders [*HFN* Oct '22], mining the depths and punching through rhythms with a dynamic flair, yet not making this the star of the show.

SPINE-TINGLING

And in terms of output, I don't think I got much beyond halfway around the preamp's volume control before I risked upsetting the neighbours, all without a hint of a hardened sound. There's a little warmth to the presentation, but it's welcome rather than cloying, and combined well with the generally neutral B&W speakers.

The recent Deep Purple live album *Bombay Calling: Live In '95* [Ear Music 0213995EMU] has a real 'feels like you're there' vibe, not just in the occasional fluffed note, but also the mix, which is as unpolished as they come. Yet Exposure's ⇨

ABOVE: Available in solid black or titanium finish options, the 3510 preamp [top] offers an updated industrial design with logic-controlled rotary input selection and motorised volume

EXPANDING EXPOSURE

Although founded in 1974, it took until the late 1990s for Exposure to embrace the notion of 'digital' and release its first CD player [*HFN* Mar '99]. Even now, nearly a quarter of a century later, its focus remains on analogue audio – it's only the compact XM series where you can buy a CD spinner, or a preamp and integrated with digital inputs. Nevertheless, the integrated and preamp models in the 3510 series [and 5010 preamp, *HFN* Nov '18], can be upgraded to support digital sources via a plug-in DAC module selling for £450. This is not new, being introduced back in 2015 for the 3010S2D integrated amplifier, and revised in 2016. Described by Exposure's designer Tony Brady as being a 'simplified' version of the Cirrus (née Wolfson) WM8742-based Exposure 2010S2 outboard DAC that debuted in 2012, it introduces playback over BNC/coaxial and USB-B inputs. The module handles PCM files up to 192kHz/24-bit, and DSD64 (via DoP) over USB.

This DAC plug-in is one of three possible modular upgrades to the 3510 preamplifier, alongside MM and MC phono boards (there's no network audio/Bluetooth option) that were first introduced in 2009. Exposure says these modules can all be retro-fitted by a 'competent DIY-er', but it's preferable to have the job done by your local dealer or specified at the point of order and factory fitted. Note however that only one plug-in can be installed at a time, so you'll need to choose between vinyl and hi-res audio…

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May 2022

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ABOVE: The 3510 pre [top] offers five line inputs (one for an MM/MC phono option), a tape loop and two preamp outs on RCAs. The 3510 power amp [bottom] includes RCA inputs and dual 4mm speaker cable sockets (for bi-wire applications) but are for banana plugs only, so there is no provision for bare wire or spades here

twin-set carries it off, making the fast-paced rock of 'Space Truckin'' lively and exhilarating, and with a resonant depth to the drum work. Ian Gillan's vocals are conveyed without thinness or undue bite, while the crowd noise that signals the intro of set-list favourite 'Lazy' was spine-tingling in its spread and sense of individual detail, this followed by an explosion of slick, smooth-edged lead guitar work.

REAL HONEY

But where does the power amp's prowess end and that of the preamp begin? I found out with Kate Bush's 'Babooshka' [*The Whole Story*; EMI CDP 7464142], and an A/B listen via a contemporary if more heavily-featured preamp. Frankly, only the Exposure Preamplifier wrestled those forensic levels of detail through the power amp without over-egging it. The sound was musical and organic even while my mind was being overloaded by the varying flavours of instrumentation – piano, hi-hat, and guitar all sounded pure and life-like.

Even better, the sumptuous tone and plump body of the fretless bass was there to savour, and Bush's distinctive singing style, all clipped diction and soaring soprano, was as sweet as honey. Play a track with a female vocal – Nina Simone, Norah Jones – and it nails it, thanks to a midband with presence and delicate detail that performs way beyond the price tag.

LEFT: Exposure's new full system remote caters for the 3510 preamp's input selection, volume, mute and power on/off

But the 3510 pre/power is a talented all-rounder too. The jaunty pop of Sixpence None The Richer's 'Kiss Me' [eponymous; Squint Entertainment 7017032616] was pleasant, as any late '90s radio hit should be, but there was excellent weight to the bassline, and a precise separation of the layered vocals that made it way more listenable than I remembered the song to be.

A more 'audiophile' piece, Lynn Stanley's 'Route 66' cover from the *Live At Studio A* SACD [A.T.Music ATM3109], evoked the smokey, jazz club vibe and demanded I sat forward to listen in as Exposure's amps captured the track's high, airy detail. Yet whether I played hip-hop, dance music or full-blown orchestral pieces, the outcome remained the same – sheer musicality, with a wonderful sense of flow.

And can this system rock? The Stooges' grimy, punkish, massively distorted 'I Wanna Be Your Dog' [*The Stooges*; Elektra 8122-73176-2] was more than enough proof. The Exposure duo didn't back off from that legendary riff, while creating a soundstage that had Iggy's atonal vocals floating above the maelstrom. Reassuringly awesome!

HI-FI NEWS VERDICT

There's not a lot going on here to catch the eye of feature counters, but that's also the point – Exposure's elegant pre/power duo is a wonderful advertisement for the 'keep it simple' ethos. The power amplifier is something of a wolf in sheep's clothing, while its preamp partner is a master of sumptuous detail and imaging. The result is pure listening pleasure at a price point that won't make you wince.

Sound Quality: 87%

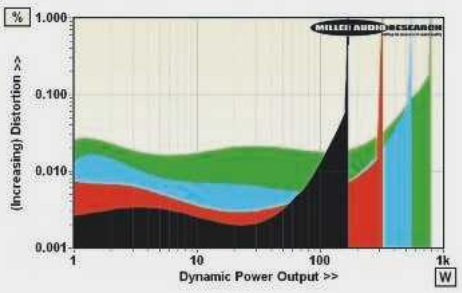
0 - - - - - - - - 100

LAB REPORT

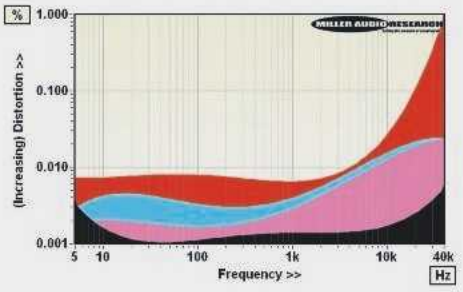
EXPOSURE 3510 PRE/POWER

Exposure's 3510 preamplifier takes some cues from the earlier 3010S2 model [*HFN* Dec '14] but its feedback regime is more 'relaxed'. Gain is unaltered at +17.2dB and the A-wtd S/N ratio only 1dB adrift at 93.3dB, but the 3010S2's very low 0.0002-0.0005% distortion is increased to 0.001-0.0024% in the newer 3510 (re. 0dBV, 20kHz-20kHz). The HF response is identical, too, at –0.5dB/20kHz and –7.4dB/100kHz, although the 3510 has a more obvious (sensible) subsonic bass roll-off of –3dB/5Hz (vs. <1Hz in the 3010S2) plus a higher 266ohm source impedance at 25Hz (vs. 160ohm). Trading slightly higher THD in the preamp's 'sound tuning' process is perfectly reasonable as these figures still fall within the envelope of the partnering 3510 power amp.

The latter behaves almost exactly like the power stage from Exposure's 3510 integrated [*HFN* Nov '21] but with a slightly higher output impedance of 0.018-0.033ohm versus 0.010-0.022ohm (20Hz-20kHz), a slightly flatter and more extended high frequency response (–0.5dB/20kHz to –9.1dB/100kHz vs. –1.0dB/20kHz and –15.8dB/100kHz) and *slightly* more grunt into very low impedance loads. Both the 3510 integrated and power amp are rated at 2x110W/8ohm and both deliver 2x135W/8ohm and 2x225W/4ohm rising to 170W, 320W and 550W into 8, 4 and 2ohm under dynamic conditions [see Graph 1, below]. Into the lowest 1ohm load the 3510 power amp has a slight edge at 795W (28.2A) versus 760W (27.6A). Distortion has a 'U-shaped' trend vs. output, decreasing from 0.005%/1W to 0.0025%/15W before climbing gently again to 0.005%/70W and 0.008% at the rated 110W (all 1kHz/8ohm). Distortion also increases with frequency, more markedly so at higher output [see Graph 2]. **PM**



ABOVE: Dynamic power output versus distortion into 8ohm (black trace), 4ohm (red), 2ohm (blue) and 1ohm (green) speaker loads. Max. current is 28.2A



ABOVE: Distortion vs. freq. (preamp at 0dBV, black; power amp 1W/8ohm, blue; 10W, pink; 70W, red)

HI-FI NEWS SPECIFICATIONS

Continuous power (<1% THD, 8/4ohm)	135W / 225W
Dynamic power (<1% THD, 8/4/2/1ohm)	170W / 322W / 552W / 795W
Output imp. (20Hz–20kHz, pre/power)	266-55ohm / 0.018–0.033ohm
Freq. resp. (20Hz–100kHz, pre/power)	–0.25 to –7.4dB / –0.16 to –9.1dB
Input sensitivity (for 0dBV/0dBW)	139mV (pre) / 179mV (power)
A-wtd S/N ratio (re. 0dBV/0dBW)	93.3dB (pre) / 89.0dB (power)
Distortion (20Hz-20kHz, 0dBV/10W)	0.001-0.0024% / 0.0016-0.018%
Power consumption (idle/rated o/p)	18W/370W (7W, preamp)
Dimensions (WHD, Pre/Power)	440x90x300/440x115x300mm

Medium output moving-coil pick-up cartridge
Made by: Clearaudio Electronic GmbH, Germany
Supplied by: Sound Fowndations, UK
Telephone: 0118 981 4238
Web: www.clearaudio.de; www.soundfowndations.co.uk
Price: £4460

Clearaudio Jubilee MC

Crafted as part of Clearaudio's 40th anniversary celebrations, the Jubilee MC features the brand's proven moving-coil mechanism housed in a 'bullet-proof' jacket

Review: **Ken Kessler** Lab: **Paul Miller**

How time flies: Clearaudio was born during the height of analogue playback, survived the arrival of digital, stuck to its guns and is now enjoying the fruits of its loyalty to the vinyl cause. Along with a vast array of record decks, Clearaudio has 16 moving-coil cartridges in its catalogue – yes, *sixteen*. To mark its 40th birthday, the company has added one more to the middle of the group of MCs, those featuring the distinctive 'flower' top plate as seen on the flagship Goldfinger Statement [*HFN* Jan '15]. The new Jubilee MC, however, is a third of the Goldfinger's cost at £4460.

Because these flower top Clearaudio pick-ups share the same long, exposed, boron cantilever and 'Prime Line' stylus, they provide an opportunity to compare how body construction can influence sound. This is a nice alternative to the concept and auditioning of a range of cartridges which differ only in styli profiles and/or cantilever materials, a practise long employed by Koetsu and other manufacturers [see boxout, p55].

SUIT OF ARMOUR

This Panzerholz flower top MC pick-up joins two other wood models (Concerto and Stradivari), plus aluminium (Da Vinci), titanium (Titanium), and gold (for the Goldfinger, of course). PM describes the Panzerholz as an 'overcoat', as underneath is a metal/polymer body similar to some of Clearaudio's other MC cartridges. This is a 'high tech' natural wood augmented by a production process which increases its hardness, while its desirability in audio applications is down to its way with handling resonance.

Clearaudio describes Panzerholz as 'bulletproof wood', and has been using it for its turntable plinths for some time. You'll also find it in Rogers' revived LS5/9 Classic SE [*HFN* May '21] and as a baffle material upgrade to the LS3/5a. And, wow, does it have an audible effect on that little speaker!

While I didn't have all of the Clearaudio flower tops to hand, I have used three or four in the past, while other experiences with material-vs-material comparisons include my own Koetsus with four different body materials; a brace of EAT Jo cartridges which differ in body materials; and two TechDAS moving-coils, one using Super Duralumin and the other titanium. So you could say I've more than paid my dues with this area of cartridge design, and have done the same when comparing styli and cantilevers within the same basic design.

> 'The Jubilee performs an astounding juggling act'

EASY DOES IT

Aside from the visual challenge presented by the flower top when aligning the Jubilee MC – and I have no idea why someone as rational as Clearaudio owner Robert Suchy persists with this top plate – the only other test of one's setup skills is the long, naked cantilever. I realise that concern for this exposed protrusion is not really any different than setting up any cartridge, however visible its cantilever, and I also know that it does make life easier vis-à-vis alignment, but there is no escaping the psychological effect. It looks like it's daring you not to snap it.

It's advisable not to over-tighten the screws, however solid the Panzerholz flower top with its metal plate. As for connections, the Jubilee MC is a model of clarity, the well-spaced pins of a perfect diameter so I had to neither crimp nor expand my headshells' tags, all colour-coded. Setup was as straightforward as one could desire via overhang templates supplied with the relevant tonearms, naked cantilever fear notwithstanding. (Just as there are names for obscure dreads such as coulrophobia, ailurophobia, *etc*, surely a fear of cartridge setup merits one? Alas, stylophobia apparently means 'fear of pens'.)

WEIGHT OF EXPECTATION

Clearaudio packages its Jubilee MC with a 2mm Allen key, 6mm and 10mm mounting screws, the Clearaudio Stylus Gauge, four gold pins and user manual. The instructions are copiously detailed, and they suggest the use of a setup LP. I'm partial to test LPs from Ortofon, Denon, and Shure, as well as our own trusty classic.

Despite tracking at 2.8g, PM advised me to install the Jubilee MC in a 'low-ish effective mass arm' [see Lab Report, p57]. Luckily, I have tonearms with various counterweights and headshells, so the seeming contradiction of balancing a cartridge that weighs a middling 7.5g to track at 2.8g was no onerous chore. My test LPs revealed no infractions, while confirming this cartridge sails through torture tests. Moreover, its high 0.5mV output (actually closer to 0.7mV) allowed use with all manner of phono stages, but in every case, ideal loading was 50-100ohm.

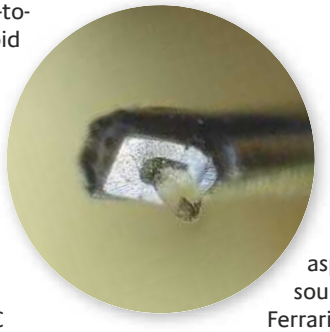
RIGHT: The Jubilee is the first pick-up to employ the laminated Panzerholz 'bullet proof' wood long-favoured by Clearaudio as the plinth material in its top-end turntables

RIGHT: Clearaudio's iconic 'flower' mounting plate includes threaded lugs, but take care not to over-tighten. The long boron cantilever, fitted with 'Prime Line' stylus [see inset picture, below] is a boon to cueing but equally vulnerable

As my notes from previous encounters confirm, the basic nature of the Jubilee MC immediately identified it as a sibling to the Goldfinger and the other flower tops. The materials' differences seem to be in transient speed, and possibly low-level detail retrieval, but – price allowing – the customer should A/B adjacent models.

FLOWER POWER

I do know from my notes that the Goldfinger seems faster. That said, the initial impression of the Jubilee MC is one of superb handling of low-level details, precise focus – especially for left-to-right image placement – and rapid but not heart-stopping transient attack. This was apparent in Led Zeppelin's *Houses Of The Holy* [Classic Records/Atlantic SD-7255], which always struck me (like all Led Zep albums) as dark and heavy, not least because of the dominance of Bonham's percussion.



Lo and behold, the Jubilee MC somehow managed to add a welcome touch of dryness to the extreme bottom end, so the mix sounded less murky. It occurred to me that I might be subconsciously dissing producer Eddie Kramer, especially after recently hearing the first Jimi Hendrix LP, and finding it marginally muddy, but criticising this aspect of Led Zeppelin's sound is like dismissing Ferraris because they are red.

On the upside, the sound had so much weight that the notion of Led Zeppelin as rock's heaviest juggernaut was reinforced in spades, and the Jubilee MC's forensic abilities worked wonders in allowing me to zoom in on Bonham's most complex passages, for better appreciating his mastery of *outré* patterns.

But it was the vocals which made it all fall into place. This cartridge performs an astounding juggling act, the three balls in the air being deep, tight, extended bass, contrasted with fast-enough highs – both of which are modern sonic preferences – but a warm, lifelike midband. Robert Plant's vocal acrobatics were showcased away from the mass of the sound, almost hovering over the proceedings.

DRINKING IT ALL IN

Lest you think that I have described inconsistency or discontinuity, Page's guitar work and Jones' bass playing enjoyed true equanimity. That sounds contradictory, but it's no more unlikely than a red wine which is both full-bodied yet delicate in parts. It's the whole that matters, and the portrayal of the Led Zeppelin oeuvre was as satisfying as I have heard this side of a Koetsu Urushi [*HFN* Nov '19].

After all this mass, this undeniable fullness, contrast was needed, so I turned to that sublime country rock milestone, *The Fantastic Expedition Of Dillard And Clark* [Sundazed/A&M LP5344]. All twanging banjos and plaintive singing, it teamed banjo maestro Doug Dillard with ex-Byrd Gene Clark on guitar and vocals, backed by future Eagle Bernie Leadon and a host of other exemplars of the genre. As you'd expect, demands made by this LP for full realisation of its principals' craft include sufficient transient control to deal with mandolin and banjo, fluidity for the ⇨

MATERIAL GIRLS

While it is doubtful that, back in the day, Shure, Grado, ADC, *et al* attributed sonic properties to the body material of their cartridges, there is no doubt that this consideration has influenced pick-up design since the ascent of the moving-coil around 1970-75. Those earlier pioneers selected materials for their ease of precision manufacture, light weight or other matters, but I don't recall any of them suggesting that the body or shell influenced sound. All that has changed.

Although Panzerholz is a very specific wood composite, Clearaudio is not the first to use a wood laminate – EAT's Yosegi [*HFN* Mar '12] being one such example. Solid wood blocks are more common, as in the Goldbug Mr Brier [*HFN* May '86], EAT's Jo N°8 [*HFN* Dec '18], myriad Grados, and – of course – the original Koetsu Rosewood. Ortofon favours plastics for its affordable cartridges, *e.g.*, the 2M series, but turns to titanium for its top models [*HFN* Oct '19 and Mar '22], as does TechDAS [*HFN* Sep '14].

At the other extreme, before the company was reborn as London and the bodies were replaced with something more substantial, Deccas were fashioned from folded, recycled tin. High impact plastics and aluminium cover the majority of body materials, but Koetsu and its rival, Kiseki, championed the use of stone such that the former now offers eight various stone-bodied MCs, nine with wooden shells and one of solid aluminium. And, yes, each has its own sound.

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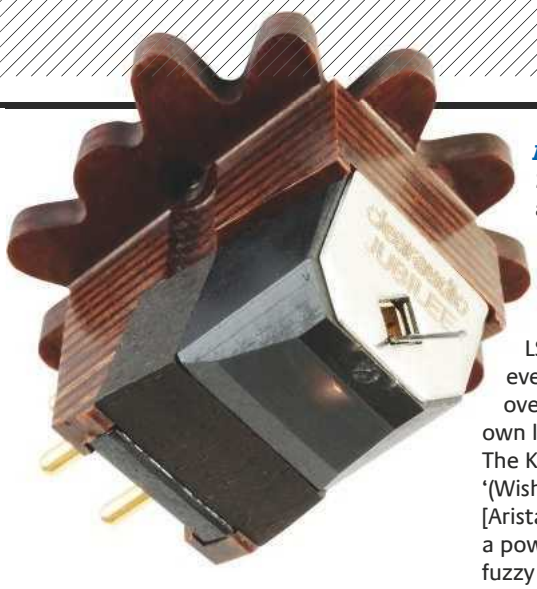

ABOVE: Inside the Jubilee MC, fine 24K gold coils are surrounded by a ring of powerful magnets. The cantilever and coils are lifted into alignment with this magnetic field when tracking at 2.8g

Dobro, and transparency to assure the tautness of the banjo head.

What aren't quite as necessary for Dillard & Clark as with Led Zep are an elephantine foundation, nor a sense of ear-busting volume even when played back at sane levels. Here again the dual personality of the Jubilee MC revealed its worth by respecting the sound throughout the LP, especially with crystal-clear, extended treble ideally essential to the sound of the Dobro. Wonders were worked, too, with Clark's distinctive voice. Unlike Plant's, it enjoyed less power than the instruments behind it, but they were never allowed to swamp him.

During my sessions I was presented with a pleasant surprise: how sweetly the Jubilee MC complemented my favoured LS3/5a bookshelf loudspeakers, even with a track which should overwhelm them. Indulging in my own listening pleasure, I dug out The Kinks' greatest lost 12in single, '(Wish I Could Fly Like) Superman' [Arista ARIST 12240]. It kicks off with a powerful, staccato bass riff and fuzzy guitars, better suited to period JBLs. The LS3/5a should not be able to convey its majesty.

ABOVE: The cartridge pins are gold-plated and well spaced to accommodate most tonearm leads/tags. The 7.5g bodyweight is low but the moderate compliance best suits lower mass arms

PERFECT HARMONY

Instead, the Jubilee MC graced the LS3/5a with bass control that suggested weight, even if it wasn't there. The midband was as near-perfect as I know the LS3/5a can be. Even the perceived levels seemed somehow louder. But if you are anticipating some clever link between the speaker and the Panzerholz of the Jubilee MC, I must disabuse you of that because my reference LS3/5a is Falcon Acoustics' 'Gold Label' – I don't have a pair with Panzerholz baffles.

Rather, the balance of the Jubilee MC suited the LS3/5a because the frequency extremes were so beautifully defined, dragging every note out of the small monitor while preserving the LS3/5a's *raison d'être*: some of the most natural voice reproduction ever realised by a hi-fi speaker. Clearaudio has much to celebrate. Not just its anniversary, but its Jubilee too.

HI-FI NEWS VERDICT

Clearaudio's Jubilee MC is deliciously schizophrenic, sounding both cutting-edge *and* vintage, as if to personify the festive nature of its release. Thus this MC offers a perfect solution for those who cannot decide between the rosy warmth of the vintage, heard in the midband, and the hyper-detail or precision of the modern, as exercised at the frequency extremes. Happy anniversary indeed!

Sound Quality: 88%

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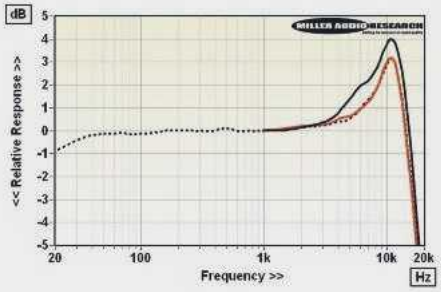
LAB REPORT

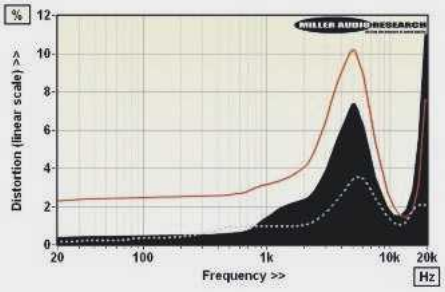
CLEARAUDIO JUBILEE MC

The origin of the 24K gold coils and symmetrical magnet array inside the Jubilee can be traced back to the generator assembly inside the Concerto [*HFN* Sep '06], Stradivari v2 [*HFN* Aug '10], Talisman v2 Gold [*HFN* Jul '12] and even the flagship Goldfinger Statement [*HFN* Jan '15] where no fewer than 12 magnets are employed. In this newest generation, output is higher than the specified 0.5mV at a generous 0.7mV (re. 1kHz/5cm/sec into 100ohm) and with a tight channel balance of 0.13dB. The Panzerholz shell is rigid but very lightweight, and even with the metal frontispiece and inset top-plate, the Jubilee weighs just 7.5g. Combine this with the higher-than-rated 20cu compliance and this MC is seems suited to lower effective mass tonearms.

Thus partnered, the Jubilee turns out to be a superb tracker (as well it might at 2.8g) surmounting the 80µm groove pitch, sailing through the +15dB band (315Hz lateral cut, re. 11.2µm) at ~0.5% THD and clearing the maximum +18dB band at ~0.8% THD. Again, like earlier Clearaudio MCs, the unequalised 1kHz/5cm/sec distortion is not 'low' at 4% but it's a benign 2nd harmonic, and the equalised stereo trace holds between 1-4% across the entire 20Hz-20kHz audioband [re. –8dB, see Graph 2]. The 'Prime Line' diamond is of high quality [pictured, p55] but the VTA is a high 28°, so some adjustment of rear arm height might be useful in tweaking its tonal balance. Talking of which, the Jubilee's response pitches up at 10kHz (+4dB lateral, +3dB vertical) before falling away to –8dB/20kHz [stereo, dashed trace, Graph 1] – a bending mode in the long cantilever, perhaps. Nevertheless the symmetry of these L+R and L-R responses augurs well for the uniformity of the Jubilee's soundstaging. **PM**



ABOVE: Freq. resp. curves (–8dB re. 5cm/sec) lateral (L+R, black) vs. vertical (L–R, red) vs. stereo (dashed)



ABOVE: Lateral (L+R, black), vertical (L–R, red), stereo (dashed) tracing and generator distortion (2nd-4th harms) vs. freq. from 20Hz-20kHz (–8dB re. 5cm/sec)

HI-FI NEWS SPECIFICATIONS

Generator type/weight	Moving-coil / 7.5g
Recommended tracking force	26-30mN (2.8mN)
Sensitivity/balance (re. 5cm/sec)	698µV / 0.13dB
Compliance (vertical/lateral)	20cu / 18cu
Vertical tracking angle	28 degrees
L/R Tracking ability	80µm / 80µm
L/R Distortion (–8dB, 20Hz-20kHz)	1.2–8.5% / 0.95–3.6%
L/R Frequency resp. (20Hz-20kHz)	+3.1 to –8.6dB / +3.4 to –8.8dB
Stereo separation (1kHz / 20kHz)	26dB / 21dB

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Canor Precision Tube DAC 2.10

This Slovakian-built DAC retains the brand's signature triode-tube analogue stage from the companion CD 2.10 disc player, but its digital engine beats to a very different tune

Review: **Jamie Biesemans** Lab: **Paul Miller**

Many manufacturers building tube-based products seem to prefer retro-nostalgic designs but Slovakia's Canor is one of the few that favours a more modern, progressive aesthetic. It not only produces tube amplifiers but also integrates line-level tube stages into source products, such as the CD 2.10 CD player [*HFN* Apr '21]. The partnering DAC 2.10 also marries an output stage containing four Electro-Harmonix 6922EH triode tubes with a digital mainboard, the latter equipped with a pair of ESS9038Q2M DACs. Otherwise this is a dyed-in-the wool 'legacy' DAC with no network or wireless functions and a fixed rather than variable output. So that large rotary is not a volume control…

As PM notes in his boxout [see p59] this digital stage is reminiscent of that employed in the EISA Award-winning Musical Fidelity M6x DAC [*HFN* Jul '22], and although they are not the same device they both offer a selection of seven digital filters to season the listening experience. And since PM tested the Precision Tube DAC 2.10, Canor has added yet another filter – Optimal Transient – that was developed by John Westlake and used in Pro-Ject's Pre Box S2 Digital [*HFN* Aug '17].

IT PAYS TO PLAY

The combination of these filters with Canor's reclocking and oversample bypass modes offers up the potential for a lot of 'tweaking' possibilities, particularly by audiophiles who like to play around searching for the most pleasing sound. As some of these filters deliver better results with high sample-rate material, rather than CD/48kHz files, you probably won't quickly settle on one selection and leave it at that. At least, that was my experience, in part because Canor made it easy to switch between the different options, with dedicated filter buttons and more on the remote. Experimenting is encouraged!

As you would expect from a DAC in this price class, it is ready for all types of hi-res material, accepting LPCM up to 768kHz and DSD streams up to and including DSD512 via its USB-B input. The coaxial S/PDIF, optical and AES/EBU (XLR) inputs [see p61] are limited to 192kHz/24-bit but full MQA unfolding is at hand, if you so desire.

The Tube DAC 2.10 is part of Canor's Premium Line, which is an apt description for a series that boasts such a luxurious appearance. The front façade stands slightly proud on all sides, its panel divided into three rows with a brushed aluminium finish above and below, and a black glass strip in the middle which dips towards a large power button in the centre. A nice contrasting look, but if you prefer a more subdued approach the DAC is also available in full black, as pictured here.

LISTEN AND LEARN

The use of orange for the Canor logo and lettering of the display is equally on-brand. Out of the box this 3.5in screen shows a lot of information, arguably too much, with

RIGHT: Large linear PSU with screened/potted transformer [top right] has separate regulation for the XMOS USB, Altera Max II processor and pairs of ESS9038Q2M DACs [centre of main PCB], in addition to the triode tube output [lower left]

ABOVE: Canor's 'multi-theme' display is big and bold while its rotary encoder (not volume) helps navigate the menus, supplemented by small buttons [centre] and compact remote [see p61]

the screen real estate dominated by 'PCM' or 'DSD', plus an icon indicating which source input is selected. Sitting a few metres away, this meant the information I really wanted to know – the incoming sample rate and selected filter – wasn't particularly legible. Then again, it's probably more interesting to just listen while trying out the different DAC filters on offer, letting your ears determine which sound you prefer.

And I shouldn't grumble too much, as Canor has actually given some thought to this. Its solution is a 'Theme' button on the supplied remote that switches the display over to the classic Canor look of large retro characters and pared down information (input and sampling rate). For some reason the word 'Atari' popped into my mind when I saw it.

Remote controls are an area where so many brands drop the ball, but in line with the 'premium' branding, Canor's is a sturdy metal unit that's both firmly in the luxury camp yet easy to operate. There's even a spare battery, a negligible cost but a nice gesture all the same. You can also navigate the settings of the Tube DAC 2.10 using the twist/press rotary encoder on the front, but, with dedicated buttons to change most of the options on the handset, there's little reason to dive into the system menus.

> 'The music is deliberately minimalist and sparse'

A FAMILY AFFAIR

It would surely have been far simpler for Canor to 'lift' the digital heart from its CD 2.10 player [*HFN* Apr '21] into this partnering Precision Tube DAC 2.10 but, for reasons that are familiar to us all these days, it was encouraged to transition from its SRC43921/AK4490EQ upsampler/DAC solution to one based on tried-and-tested ESS silicon. So, while the Precision Tube DAC 2.10 still employs Canor's familiar 6922 triode tube-based analogue output stage and XMOS USB input, the digital 'filling' is now a combination of ESS's ES9311 regulator, three separate crystal clocks and a pair of surface-mount ES9038Q2M DACs. Now if this latter section sounds familiar, and the production engineering of its digital PCB *looks* familiar, then there's good reason because Canor is also a longstanding sub-contractor for what is arguably the world's leading hi-fi brand – Pro-Ject.

Audio Tuning Vertriebs GmbH, the parent of Pro-Ject Audio Systems, also owns the Musical Fidelity brand and it's one of this company's recent products, the EISA Award-winning M6x DAC [*HFN* Jul '22], that shares a very similar DAC/clock PCB layout. The cooperation between the two brands makes great sense, and aside from the benefits brought by economy of scale, the two companies remain linked by geography and personnel – one of Pro-Ject's key electronics designers having been on the board at Canor. The high-tech production facilities at Canor's Slovakian plant are perfectly placed for Pro-Ject's higher-end electronics separates, leaving the fullest capacity of Pro-Ject's own SEV Litovel factory devoted to building its seemingly inexhaustible range of turntables [see p66].

But you don't need *Hi-Fi News*' technical expertise to imagine some sharing of genetics between the M6x and Precision Tube DAC 2.10, as both products share a very specific set of user-selectable digital filters. Seven of these are baked into the ESS9038 DAC – five with 'fast' (sharp) roll-off characteristics and two with 'slow' (gentler) treble roll-offs – but these are joined here by a custom 8th 'oversample bypass' mode that invokes a unique, low-overhead minimum phase filter. For a deeper dive into these filters, see the Lab Report on p61. PM

The Tube DAC 2.10 was tested in a system featuring a Hegel H590 integrated amplifier [*HFN* Oct '18] driving a pair of Focal Sopra N°2 floorstanders [*HFN* Sep '15]. As Hegel's amp recently received (long-awaited) Roon Ready status, this let me switch quickly from Canor's DAC (streaming handled by an Auralic Aries LE) to the AKM-based digital stage in the Norwegian-built H590.

OPTIMAL EXPERIENCE

My previous experiences had indicated that the fine internal digital stage of Hegel's amp could still be bettered by an external DAC, and that was certainly the case here. Canor's Precision Tube DAC 2.10 immediately showed itself as an upgrade, with a greater sense of scale and timing.

The mellifluous voice of Samuel T. Herring was revealed to the world when he guested on DJ Shadow's recent 'Our Pathetic Age' album, a performance which in turn exposed Herring's own Future Islands to a larger audience. And the group's 'As Long As You Are' [4AD 4AD270; 96kHz/24-bit], a slice of relatively simply constructed synthpop, proved a fine choice for analysing the effect of the DAC's filters.

This is music deliberate in its minimalism, with sparse synthesisers and percussion forming the backdrop to Herring's vocal. Playing around while listening, I eventually settled on 'Optimal Transient' – the newly added filter from John Westlake. On the tracks 'Waking' and 'The Painter' in particular, this was an excellent middle-ground choice, delivering rhythmic drive and rich detail. I wouldn't say that using the upsampling/reclocking options with the other filters had a big impact on these pieces, however.

Portraying the full textural wealth of the latest Akademie für Alte Musik Berlin recording was something the Tube DAC 2.10 appeared to managed with ease.

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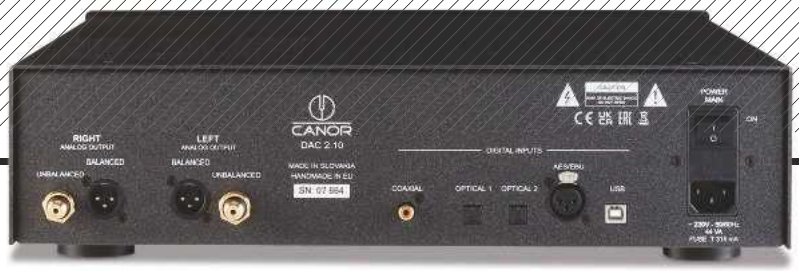

ABOVE: The Precision Tube DAC 2.10 offers USB-B (768kHz/DSD512), AES, coaxial (192kHz) and two optical ins with fixed analogue outputs on RCAs and balanced XLRs

I was fascinated by the classical outfit's (second) recording of Bach's Brandenburg Concertos last year, but its *Paul Wranitzky: Symphonies* set [Deutsche Harmonia Mundi 19658702252; 96kHz/24-bit], released earlier this year, doesn't disappoint either. The album exudes the grandeur of 18th century symphonic set-pieces, in this case played on era-authentic instruments – that's the Akademie's thing, after all – and I loved how Canor's outboard DAC managed to unearth all the little nuances, even with Wranitzky pieces that start out quietly but build quickly to an attention-grabbing climax.

When the percussion makes its impressive entry in 'III.Allegro of Symphony in C Minor – La Paix' the sense of realism was immense. The sound was so dynamic and natural, with the drum beats resonating through the concert hall, that I nearly jumped out of my seat. Talk about *fortissimo*!

CAN I GIVE YOU A LIFT?

At the same time, the Tube DAC 2.10 had the insight to give the flutes their own discrete place in the soundstage, not neglecting the subtleties while the timpani player goes for broke. Lifting small details out of the whole without disturbing the overall balance is where this unit really excels, with the added fun of switching from, say, Linear/Minimum Slow to Apodising Fast to add a little bit of sparkle.

A DAC such as this might predominately be used with streaming hardware via USB, considering current listening preferences, but let's not forget there are other worthy digital sources out there. And, with the Tube DAC 2.10 hooked up to a Pro-Ject RS2 T CD transport [*HFN* Sep '19] via its optical input, some of that 'sound tuning' becomes more enticing. Sure, the various filters didn't make a noticeable difference when streaming hi-res files, but that's less the case with *The Colours You See* [Naim Records Naimcd365] from the Gauthier Toux Trio. Even discounting the small level difference when going from the non-upsampling 'Optimal Transient' filter, the nimble piano and intricate drum playing were decidedly more precise and natural with upsampling in play on most of the other filters.

LEFT: Canor's compact remote accesses upsampling, reclocking, digital filter and 'display theme' options plus power on/off and audio mute

SOLID COMPETITION

There's a subtle diversity offered by these features, and the *overall* performance of the Tube DAC 2.10 is exemplary. What surprised me the most during my audition, however, was that I expected the tube output stage to impact playback in another way – imparting a touch of softness and smoothing over edges, perhaps. What I got, on the other hand, was a DAC that came across as wonderfully meticulous and clear, and with a greater sense of detail and balance – and some extra warmth – than I've experienced with most entirely *solid-state* implementations of this popular ESS chipset.

HI-FI NEWS VERDICT

Canor's Tube DAC 2.10 is premium as promised, both in terms of fit and finish, and its engaging portrayal of music. The tube output stage is a brilliant addition to proven ESS chips capable of playing nearly all hi-res files, resulting in an accomplished DAC that delights with its precise but resolutely organic sound. The choice of eight filters is a further boon, making this a superb upgrade for restless audiophiles.

Sound Quality: 85%

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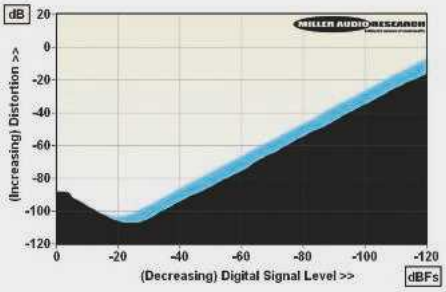
LAB REPORT

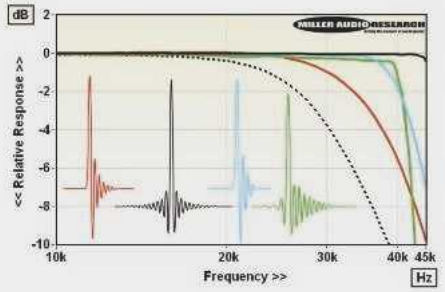
CANOR PRECISION TUBE DAC 2.10

This well-implemented 6922 triode-based analogue output incurs a mere 0.0075% distortion across the full 20Hz-20kHz audio range at the max. 3.9V balanced output. Distortion falls to just 0.0005% over the top 30dB of its dynamic range [see Graph 1], the A-wtd S/N ratio remains a wide 110dB and low-level resolution is good to within ±0.1dB from 0dBFs to –100dBFs. 'Reclocking', incidentally, has very little impact on jitter which remains exceptionally low at 6-10psec but the triode output does raise its head in the increased (bass) source impedance (205ohm/1kHz to 1.65kohm/20Hz). However, it's your choice of filter (digital or analogue) that'll have greatest subjective impact.

In order, the filters are Linear Phase Fast [black traces, Graph 2], Linear Phase Slow, Minimum Phase Fast, Minimum Phase Slow [blue], Apodising Fast, Corrected Phase Fast [or Hybrid, green], Brickwall and 'Oversample Bypass' [red]. The Linear/Minimum/Apodising Fast and Brickwall all have sharp roll-offs [the Hybrid filter has a steep but early roll-off], with Linear/Minimum Slow and 'oversample bypass' offering gentler treble roll-offs, reduced 'ringing' but poorer stopband rejection. Specifically, the five 'Fast' filters offer a 75-99dB rejection of digital aliasing images with 48kHz media, falling to 12-18dB with the Slow and 'Oversample Bypass' filters – these are best suited to higher sample rate files. With 48kHz media the responses reach out to –0.0dB, –3.5dB, –0.04dB, –5.0dB, –0.8dB, –12dB and –4.0dB/20kHz, respectively (and –0.3dB/20kHz with 'Oversample Bypass'). With filter 1 (Linear Phase Fast), enabling the *analogue* filter limits the response to –0.4dB/20kHz, –15dB/45kHz [dashed trace, Graph 2] and –30dB/60kHz. **PM**



ABOVE: THD versus digital level over a 120dB range with 24-bit/48kHz data (1kHz, black; 20kHz, blue)



ABOVE: Freq. and time resp. (96kHz files) with fast linear (black; w analogue filter, dashed), slow minimum (blue), hybrid (green) and 'oversample' (red)

HI-FI NEWS SPECIFICATIONS

Maximum output level / Impedance	3.9Vrms / 205-1650ohm
A-wtd S/N ratio	109.7dB
Distortion (1kHz, 0dBFs/–30dBFs)	0.0075% / 0.0005%
Distortion & Noise (20kHz, 0dBFs/–30dBFs)	0.0076% / 0.0007%
Freq. resp. (20Hz-20kHz/45kHz/90kHz)	+0.0 to –0.0dB/–0.5dB/–0.7dB
Digital jitter (48kHz / 96kHz)	6psec / 10psec
Resolution (re. –100dBFs / –110dBFs)	±0.05dB / ±0.6dB
Power consumption	32W (1W standby)
Dimensions (WHD) / **Weight**	435x120x405mm / 11kg

Two-and-a-half-way standmount loudspeaker
Made by: AVID Hi-Fi Ltd, Kimbolton, Cambs
Supplied by: AVID Hi-Fi Ltd
Telephone: 01480 869900
Web: www.avidhifi.co.uk
Price: £60,000 (including stands)

AVID Reference Three

The largest standmount in AVID's all-alloy Reference range is bigger and heavier than most floorstanders...
Review: **Andrew Everard** Lab: **Paul Miller**

Standmount speakers – it's easy to see why they're popular. They're relatively compact and light enough to position with ease, whether on bookshelves or stands. They aim to offer a compelling sound in smaller spaces, are affordable, often due to mass-production overseas, and can be driven with ease by relatively modest amplification. Trouble is, the AVID Reference Three, while undeniably a standmount speaker, flies in the face of all the above.

To cover off some of the practicalities, these £60k-a-pair speakers are tall at 114cm on their dedicated stands, and weigh 100kg apiece with an all-up shipping weight of 150kg per speaker. They come in black as standard, with chrome trimmings and a decorative lattice on the sidewalls, but other finishes are available to order, every set built by hand in Huntingdon, Cambs. The enclosures are assembled from 'aerospace grade' aluminium plate up to 2cm thick, with no visible fixings and joints sealed with O-ring gaskets. In other words, these speakers are built like the finest of British mobile armour, except they tend to work rather better straight from the box.

'Clare Farr's trombone more than holds its own'

START ME UP

You'll probably want to be a little more ambitious with the amplification than you might with a pair of 'normal' bookshelf speakers – AVID suggests 40-400W as the recommended output, but I'd probably err toward the upper reaches of that range, as we did under test with a pair of hefty Constellation Inspiration Mono power amps [*HFN* Oct '19]. In return you'll make best use out of that claimed 88dB sensitivity and bass extension down to 35Hz [see PM's Lab Report, p65], plus a design aimed to be more room-friendly than you might expect from a speaker with such output.

That's where the stand comes into play – its aluminium T-shaped frame bolted to the underside of the speaker between its two downward-venting ports. Unlike the smaller Reference Four [*HFN* Feb '22] – a mere 25kg tiddler – whose port fires onto the top of its integral stand above a conical diffuser, the Reference Three's dual reflex tubes are more conventional in design [see inset picture, p63].

A FAMILY AFFAIR

The speaker is part of a four-strong range topped by the massive Reference One, a £215,000 340kg floorstander reaching 205cm in height and hosting seven drivers to deliver a bass response that's rated down to 20Hz. All four models use similar technology, just to varying degrees, and weight...

The Morel-sourced drivers, which are clamped into the baffle between aluminium compression plates, start with a 28mm silk dome tweeter that's set into a short flare to improve its off-axis response. This dome is coated with a damping material called Acuflex, to better manage any breakup modes, just as the combination of a titanium former and 'Hexatech' aluminium voice coil improve linearity and power handling.

Below is a pair of 160mm woofers with damped polymer composite cones and tuned mass damping to control distortion [see PM's boxout, p63], AVID claiming to have 'resolved the vibration issue at source, just leaving a stunning clarity of sound', which is certainly fighting talk! Again the combination of titanium

RIGHT: AVID's diagonally braced cabinet has 20mm-thick alloy panels and hosts two 160mm polymer-coned bass/mid drivers with a 28mm silk-dome tweeter, all sourced from Morel

VIBRATION CONTROL

Over the years many methods have been employed by loudspeaker designers to manage cabinet resonances, from the controlled flexure of lightweight plywood panels to lattice-like internal bracing or the constrained layer damping favoured by the heavyweight brigade. Here a very 'lossy' polymer layer is sandwiched between panels of fibreboard, wood or alloy, or a brace and panel, to convert this vibration to heat. AVID, by contrast, meets this unwanted mechanical energy at source, using 'tuned mass dampers' to suppress resonances in the driver frames themselves. Computer modelling predicts the mass, shape and position of these vibration-suppressing masses, seen here [red] clamped to the rear of the bass/mid drivers via decoupled risers [green]. All that remains are the two diagonal side-wall braces and downward-firing reflex ports. PM

former and Hexatech winding is used in the motor assembly, which also employs a hybrid neodymium/ferrite magnet system to increase the system efficiency.

The cabinets are divided internally using angled baffles to combat standing waves while, of course, those hefty panels resist flexing and resonance. The crossover, tucked into the rear of the cabinet, uses high voltage ClarityCap capacitors and low-resistance air core inductors wound with 1.25mm self-bonding enamelled wire.

So, who are the Reference Three speakers for? Well, AVID indicates they're suited for rooms that the larger Two and One models might overpower, suggesting that they are 'capable of performing to the same high level as our other Reference loudspeakers, just on a more intimate basis'. We certainly encountered no problems with the speakers set up in PM's listening room, where they were no more imposing than a pair of modest floorstanders – despite the uncommon depth of the cabinets – while the design enabled them to be used well back, positioned close to the rear wall.

COMPLETE CONTROL

From the off they grabbed the attention, with a dramatic rendition of the Aldeburgh Strings' recording of Britten's *Young Apollo* [Linn Records CKD478]. There was a wonderful sonority to the piano against the orchestra, and a completely integrated balance. The weight of the lower octaves of the keyboard was suffused with a real sense of the vibration of the strings in the frame, and then speed and rhythmic acuity in the right hand. So there was substance, but with tight control, too, this contributing to the sense of space and precise soundstaging.

And that detailed sound was also in evidence with Art Of Noise's 'Moments In Love' from *Noise In The City* [Music on CD MOCCD14069]. True, this isn't the most obviously live sound, but rather just packed with information. Yet things get a bit livelier with the closing cover of 'In The Mood', with very well-disciplined clapping along with the music, and a great grumbling bassline. Superb, silly fun!

The (Le) Concert Spirituel recording of Handel's 'The King Shall Rejoice' [*Coronation Anthems*; Alpha ALPHA868] sounded magnificent, complete with powerful drums and a fine unforced sense of live performance. There was nothing artificial or studio-y here, but instead a real impression of experiencing the music in a live space. It was a big, exuberant sound, but one with bags of detail to back it up, and those very 'Handel' vocal flourishes had a glorious ringing quality.

With the unusual instrumentation of Sachse's 'Concerto In F major' from Clare Farr's *Loudmouthed Beauty* recital [Lawo LWC1242] – bass trombone accompanied by church organ – the AVID Reference Threes delivered a persuasive impression of the two instruments in a church acoustic. Both the low-frequency power and harmonic richness of each was evoked, their notes ringing through the space. In the theme and variations of the third ⇨

LEFT: The cabinet is bolted to AVID's massive alloy stand, whose main vertical strut bisects the two downward-firing ports. Stability is ensured by the stand's huge three-point footprint

rose

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LEFT: The two-and-a-half way crossover is split between bass/mid and treble arms at ~1.5kHz, the upper unit with a gentler roll-off. The four 4mm cable posts support both bi-amping and bi-wiring

movement the effect was even more striking, with the extraordinary power of Farr's instrument holding its own against the mighty organ.

GOOD VIBES

Give these speakers a somewhat lower-fi recording, such as 'Ain't No Secret Thing' from guitarist Snowy White's *Driving On The 44* album [self-released, SWWF 2022], and the effect is just as captivating. The vocal is slightly recessed and suitably careworn, while the guitars sing against a driving rhythm section, powering out a slow blues, complete with power chords and the odd solo. It's a curiously old-fashioned sounding album, and some way short of an audiophile recording, but AVID's Reference Threes brought it out into the room with real impact – and just the right 'old blokes sitting around making music' vibe.

That ability to dig deep into the tonality of instruments was equally clear with the soundscapes of Robert Fripp's *Washington Square Church* [Panegyric DGMSP103]. With the guitars and the washes of electronica behind them, it was a spacey, at times unsettling experience, helped enormously by the weight of the speakers and their ruthless control, ensuring that every element of the sometimes-frantic sound was readily apparent.

'LITTLE' BEAUTIES

Pushing their low-frequency ability with the appropriately-titled 'The Drum Thing', from Hungarian jazzers Reservátum Orchestra [*Towards South*; Hunnia Records HRES2211], showed the speakers could slam hard without smothering the subtle tones of the winding percussion. All this, before the whole track shifts into a full-on assault with seemingly everything including the pots, pans and kitchen sink being struck.

Returning to audiophile turf with the simple 'straight to single microphone' recording of Paul Berner & Michael Moore's *The Gift* [Sound Liaison SL1058A], and the sheer presence of the clarinet and bass before the listener was spellbinding. This is a truly 'in the room' recording, and the Reference Threes' remarkable imaging and clarity really made it spring to life in an entirely 3D fashion, with every breath apparent. There is real beauty in the sound of these beasts!

HI-FI NEWS VERDICT

Put aside the jaw-dropping price for a moment, for these speakers really are something special, with a performance as monumental as their build, projecting sensational detail and musical involvement. Unless you live in a converted hangar, these are probably as big as you'll need to go in the AVID range, delivering a sound easily the match of many a larger floorstander, with breathtaking imaging and soundstaging.

Sound Quality: 87%

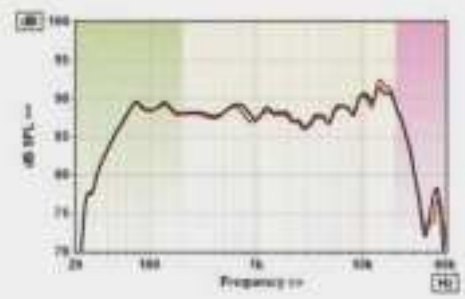
0 - - - - - - - - - 100

LAB REPORT

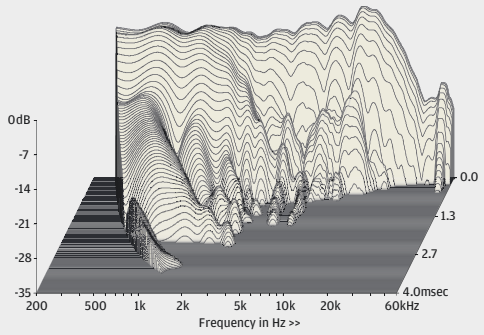
AVID REFERENCE THREE

Take AVID's reflex-loaded Reference Four [*HFN* Feb '22], double the cabinet volume and add a further 160mm polymer-coned woofer and, broadly speaking, out pops the Reference Three. An increase in sensitivity should be possible, and although AVID rates both models at 88dB, in practice the Four's 85.5dB/1kHz sensitivity is boosted to 87.2dB/1kHz (87.9dB/500Hz-8kHz) in the Three. This worthwhile uplift in sensitivity is partially traded against bass extension and amplifier loading. The latter is tougher – though not atypically tough – than we saw in the Four, with the largest –50°/+46° swings in phase angle and minimum 3.6ohm/140Hz impedance all occurring at low frequencies and resulting in a minimum EPDR of 1.7ohm/97Hz.

Meanwhile, the dual 160mm drivers both operate over a 50Hz-630Hz/–6dB bandpass (the lower woofer is filtered >900Hz) and augmented by two downward-firing ports at 30Hz to deliver an impressive, diffraction-corrected bass extension of 35Hz (–6dB re. 200Hz). The Four achieves 30Hz, but requires more amplifier power to realise the same bass *level*. The forward response [Graph 1] is slightly 'U-shaped' with a rising, undulating presence/treble contributing to errors of ±2.6dB and ±3.1dB (200Hz-20kHz), but pair matching is just 1.0dB, tightening to 0.5dB from 500Hz-8kHz. The partnering 28mm doped silk dome tweeter rolls away above 19kHz to ~26kHz (–6dB re. 10kHz) and while minor mid/presence resonances are visible in the CSD waterfall [Graph 2], the lack of any *ultrasonic* dome break-up ensures a clean impulse response. Distortion is also consistently low at ~0.2% through mid and treble (re. 90dB SPL/1m). **PM**



ABOVE: Response inc. nearfield summed driver/port [green], freefield corrected to 1m at 2.83V [yellow], ultrasonic [pink]. Left, black; right, red



ABOVE: Cabinet resonances look to be well suppressed leaving mild mistermination/cone modes >2kHz

HI-FI NEWS SPECIFICATIONS

Sensitivity (SPL/1m/2.83V – 1kHz/Mean/IEC)	87.2dB / 87.9dB / 86.3dB
Impedance modulus: minimum & maximum (20Hz–20kHz)	3.6ohm @ 140Hz 24ohm @ 64Hz
Impedance phase: minimum & maximum (20Hz–20kHz)	–50° @ 75Hz +45° @ 54Hz
Pair matching/Resp. error (200Hz–20kHz)	1.0dB/ ±2.6dB/±3.1dB
LF/HF extension (–6dB ref 200Hz/10kHz)	35Hz / 26.3kHz/26.1kHz
THD 100Hz/1kHz/10kHz (for 90dB SPL/1m)	0.45% / 0.2% / 0.18%
Dimensions (HWD) / **Weight** (each)	1140x460x605mm/100kg

Belt-driven turntable system with electronic speed control
Made by: Pro-Ject Audio Systems, Austria
Supplied by: Henley Audio Ltd, UK
Telephone: 01235 511166
Web: www.project-audio.com; www.henleyaudio.co.uk
Price: £799 (inc. arm and cartridge)

AUDIO FILE

Pro-Ject Debut PRO S

The longest serving, and arguably most diverse of Pro-Ject's turntable ranges is the Debut, launched in 2000. Now there's a new model, with an equally new S-shaped arm

Review: **Jamie Biesemans** Lab: **Paul Miller**

Launching new turntable models as regular as clockwork is part-and-parcel of Pro-Ject's business model, but say what you will: its approach of incrementally improving and tweaking proven designs has certainly not done the Austria-based manufacturer any harm. Lacking accurate market numbers, it's hard to say conclusively, but there seems little doubt the company founded by Heinz Lichtenegger in 1991 is surely the largest turntable manufacturer on the planet, both for the in-house Pro-Ject brand and as an OEM supplier for third parties.

Joining the ranks of its popular midrange Debut family is the belt-driven Debut PRO S, launched this autumn. You might think this is a special edition of the EISA Award-winning Debut PRO [*HFN* Sep '21] presented last year to celebrate the company's thirtieth anniversary, as Pro-Ject has a tradition of offering upgrades and 'superpacks' for existing products. But the PRO S is neither an 'SE' model nor an outright replacement for the existing PRO. Instead, we're talking about a very similar turntable with one – well, actually more than one, but we'll get to that – crucial difference, as indicated by the addition of an 'S' at the end of its name.

CONCORDE TAKE-OFF

This is a Debut fitted with a 10in (254mm effective length) S-shaped tonearm, offering an alternative to the straight arms bundled with all other models in the range. In fact, Pro-Ject currently only implements S-shaped tonearms on a few of its products, notably the flagship Signature 10 and 12. As you would expect, the factory-fitted cartridge isn't the Pick-IT PRO of the Debut PRO but a custom-built version of Ortofon's iconic Concorde moving-magnet. It's not a new cartridge, though, as Pro-Ject has been offering it separately for a while now.

Both Debut PRO models will continue to exist side by side, offering music lovers wishing to step up from the Debut EVO two very distinct choices. Yes, a lot of elements are the same, such as the motor assembly, main platter and feet, but you won't quickly find a competing brand offering a dual midrange flagship like this. Priced at £799, the Debut PRO S is more expensive than the regular PRO model (£699), making the choice one that won't purely be based on taste. The price hike is not only caused by the changeover to another tonearm, but also some other upgrades handed to this new model.

'Radiohead's re-released *OK Computer* was a lot of fun'

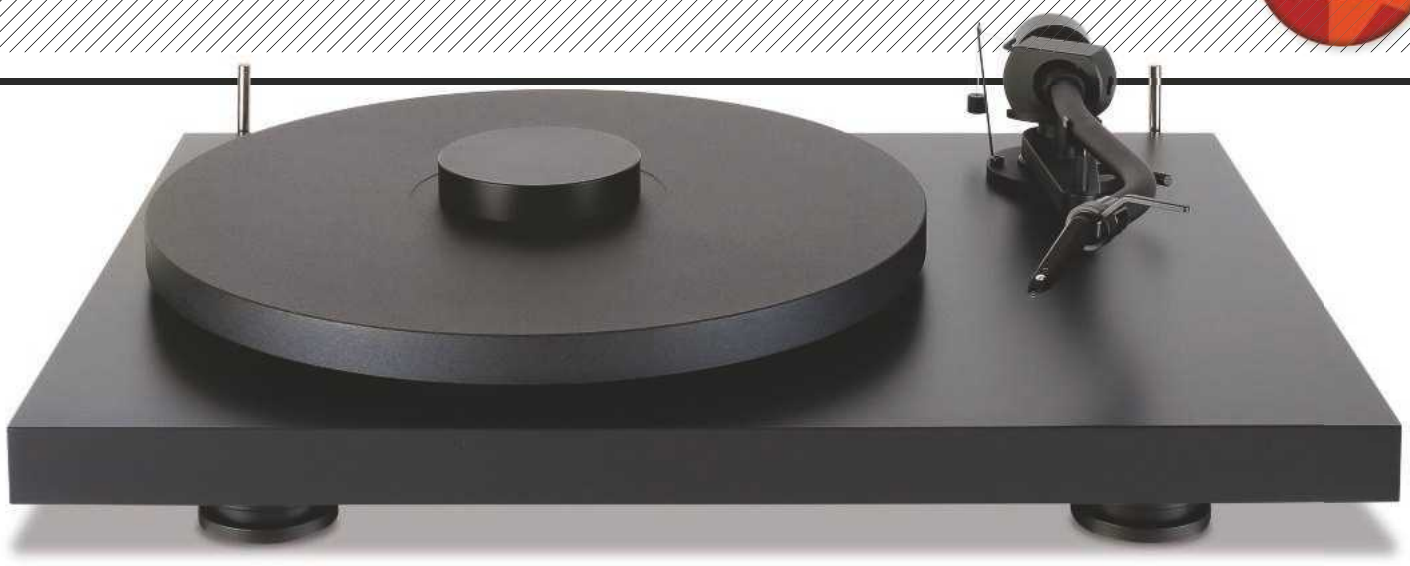
PAINT IT BLACK

Probably the most impactful difference is replacing the standard sub-platter used on most Debut models with a heavier aluminium disc. With a Debut PRO and the Debut PRO S deck next to each other, it's also immediately obvious that the newcomer has a wider MDF chassis.

The plinth also retains the MDF material and the clean layout of motor and rear/underside RCA connections [see pic, p69]. There are no changes to the sleek matte black finish either – and because the turntable's feet, tonearm, and elements such as the bearing block and counterweight are dressed in the same way as the plinth, and there are no logos in sight (except on the dust cover), the Debut PRO S has a brooding, modern look to it, reminiscent of the matte skins much beloved by some drivers of German performance cars. On top of that Pro-Ject bundles a Record Puck E with this model, which is usually a £25 aftermarket accessory. And, yes, this natty little record weight is also finished in matte black.

Wondering about another colour option, such as the rather nice green or

RIGHT: With the TPE-damped alloy platter removed, the new diamond-cut sub-platter, belt and AC motor are all revealed beneath. The speed selector is underneath [bottom left] – switch right for 45rpm and left for 33.33rpm



yellow available for the Debut EVO? Don't bother: black is the only option available for the new Debut PRO S model.

UPGRADE PATHS

Setting up the Debut PRO S is a doddle. After a few million disc spinners sold, Pro-Ject has its documentation and setup instructions down to a tee. Tonearm and cartridge are factory-fitted, and normally speaking no user adjustments to azimuth or VTA are required. Of course, if you're looking ahead to future upgrades, those adjustments are possible.

It's during the limited assembly required that you'll encounter the hefty aluminium sub-platter, which is placed first so you can loop the flat belt around the pulley. As is often the case with Pro-Ject turntables, there's also a second, round belt included which can be swapped in to spin 78rpm discs. Presumably most people will be playing 45 or 33.3rpm vinyl, and changing between these two speeds is achieved via a three-way switch on the bottom of the deck. This is easily reachable, so operating the speed control is no problem, and makes the already sleek plinth look cleaner still by the lack of visible buttons. The main platter, developed from the PRO, is a machined aluminium disc with a resonance-damping ring of TPE looped around the inside.

Setup flexibility is what you'd expect from a turntable positioned well above first base. Height-adjustable damped feet allow you to quickly level the deck, and the new S-shaped tonearm, with SME-compatible connector, makes it easy to upgrade to a new cartridge and headshell, which is a key reason to opt for this particular PRO S model [see boxout, below].

Completing the package is a dust cover and a Connect-it E RCA cable. The turntable's internal wiring is in line with Pro-Ject's recent drive to promote balanced connections [*HFN* Sep '22], allowing users to make a balanced link with a suitable cable adapter and phono preamp such as the Phono Box S3 B. Of course, you'll need to change to a moving-coil cartridge to reap those balanced benefits.

ABOVE: This latest Debut PRO has a larger (wider) hand-painted plinth, new sub-platter and very new S-shaped alloy tonearm with detachable Pick it S2 'Concorde' MM

PLAY IT LOUD

As mentioned, the Pick it S2 C cartridge is derived from Ortofon's Concorde line, which many would associate with a DJ deck – yet its sound in the Debut PRO S is more refined and detailed than needed for spinning discs in a nightclub. The emphasis does remain on producing a dense, massive sound, but it's one from which dynamic, bright detail still stands out. It's big and roomy, but always hi-fi.

These characteristics suited listening to 'Sonnenaufgang' from Richard Strauss's *Also Sprach Zarathustra* [Decca 028948409617], the prelude to the rest of his symphonic poem. Although less than two minutes long it is instantly recognisable – a few notes suffice, thanks to Stanley Kubrick's memorable use of it in *2001: A Space Odyssey*. With the Debut PRO S hooked up to a Primare I15 amplifier [*HFN* Oct '18] and a set of DALI Rubicon 2 standmounts, the music filled my room.

There's a lot of sheer power and dynamics in this 1959 Herbert von Karajan recording, re-released 60 years later in a limited edition pressing from Decca and Pro-Ject itself. And while working through the piece's nine parts the Debut PRO S proved capable of handling big orchestrations, opting for a relatively largescale, weighty portrayal with a palpable sense of depth. Individual instruments were also well-defined – the church organ at the end of 'Der Genesende' ⇨

BEND IT LIKE PRO-JECT

Nearly all current Pro-Ject turntables are equipped with a straight aluminium/carbon sandwich tonearm. However, you don't need to travel too far into the company's past to discover multiple decks fitted with S-shaped arms. That came to a stop a few years ago, as the required diamond polish technique became too expensive, and Covid-related labour shortages added to the burden. 'That's resolved and producing them is easier now', says Pro-Ject founder Heinz Lichtenegger, and he sees some advantages in embracing this type again. 'The effective mass is greater with an S-tonearm than an equivalent straight arm, which gives you another resonance frequency to work with.'

Traditionally, S-shaped tonearms were made from aluminium. The Austrian brand isn't changing that, opting to forgo its signature aluminium and carbon mix. 'This would be very hard to do', says Lichtenegger. 'Carbon is not a material we can easily form into a curved shape. Also, it is difficult to fit a detachable headshell. An aluminium tonearm also has a bit of a softer sound, which is why we chose the Pick it S2 to emphasise a bigger, louder presentation.'

According to Lichtenegger, a lot of vinyl lovers want to change cartridges on a regular basis. This desire has increased pressure to bring back S-shaped tonearms, as the SME-connector makes changing a headshell and cartridge extremely easy. And it turns out the Debut PRO S isn't a one-off – according to Lichtenegger, Pro-Ject has big plans to do more with S-shaped arms in 2023...

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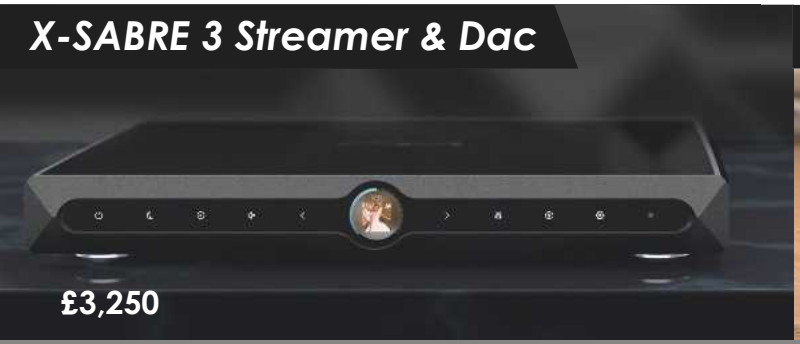

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ABOVE: Stereo RCA sockets are mounted under the left of the plinth, PSU input to the right. Three machined feet screw into place for levelling and vibration control

and the horns in 'Das Tanzlied' appearing rich and distinct – while the soft dynamics displayed at the end of 'Das Nachwanderlied' were treated with respect.

MORE THAN JUST OK

Good definition and deft handling of midrange frequencies made rediscovering Radiohead's *OK Computer OKNOTOK 1997 2017* [XL Recordings XLLP868] a lot of fun as well. This triple-LP version of the 1997 album, with its numerous B-side additions and trio of previously unreleased songs, is a diverse, genre-hopping exercise, and one which found Pro-Ject's turntable up to the task. It positioned the overdriven guitar which backs up Thom Yorke's vocal on 'Lift' out to the far left of the soundstage, keeping it detailed rather than a wash of distortion, and gave bass and percussion their own presence.

Listening to some more rock-orientated albums showed this deck and cartridge to be an excellent performer with the genre, thanks to the full-range, full-size sound. There was no smearing of the image either when spinning the complex avant-garde music of *Burn* from Sons of Kemet [Naim NAIMLP201]. Marrying Afrobeat and Caribbean folk influences with jazz orchestrations – sometimes driven by a very fat tuba – the Kemets' music can be an acquired taste, yet the Debut PRO S had the timing and resolving ability to play these rousing songs with impressive coherence.

Comparing a Debut PRO with Pick-IT PRO cartridge to the Debut PRO S with its Concorde derivative was… interesting. Sonic differences were quite pronounced, with the Pick it S2 C cartridge and S-tonearm putting more of a spotlight on the minimalistic piano playing and vocals of Melanie de Biasio on 'Your Freedom Is The End Of Me' [*Lilies*, PIAS PIASL070LP] than the Pick-IT PRO. Furthermore, a little extra precision and a tad more bite to the sound better suited the overall feel of this album, which continually lurches between triphop and jazz.

The final track on side A, 'Sitting In The Stairwell', consists only of De Biasio's sultry vocals and her snapping her fingers, recorded in a reverberant space that sounds suspiciously like a stairwell. I recently played this same song on a Pro-Ject X2 B [*HFN* Sep '22] with an Ortofon Quintet Red MC, and the level of microdetail and envelopment was astonishing. The Debut PRO S couldn't rival that performance, but was still a very satisfying listen, and compared to the 'regular' Debut PRO there was definitely a greater sense of drawing the listener in.

THE CHOICE IS YOURS

Does that make the PRO S superior to the Debut Pro? Not *per se*, even though one is slightly more expensive than the other. But there really is a choice on offer in terms of sound character. And no one would complain about that, surely?

HI-FI NEWS VERDICT

The Debut PRO S is an enticing package, with a well-designed deck at its core, together with all the bits and bobs you need to listen to vinyl in higher quality. It lives up to its promise of offering a real performance uplift over Pro-Ject's (and other brands') entry-level players – and quite a few midrange models too. It's also a foil for the Debut PRO, with a distinct and brighter sound plus painless upgrade potential.

Sound Quality: 87%

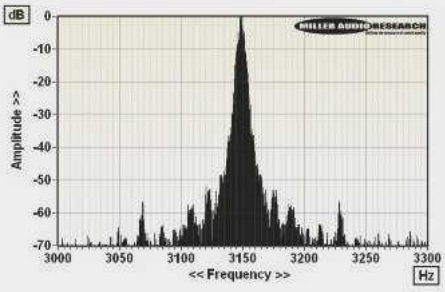
0 - - - - - - - - - 100

LAB REPORT

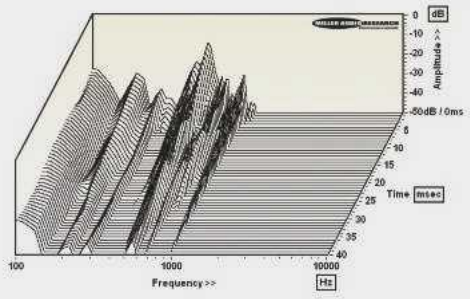
PRO-JECT AUDIO DEBUT PRO S

Like the original Debut PRO [*HFN* Sep '21] the new 'S' shares the same PSU and decoupled AC motor as the earlier X1 [*HFN* Aug '19] and X2 [*HFN* Nov '19] models, although the TPE-damped alloy platter now sits on a 'diamond-cut' alloy sub-platter. Once again, the deck is supplied with glued round-section (78rpm) and continuous flat-section (33.3/45rpm) rubber belts, the latter essential to realise the low 0.02% peak-wtd wow [see Graph 1] and very minor –0.06% absolute speed error. We've seen the ±82Hz/0.04% flutter before on the Debut PRO and X2 turntables, this component also popping up on the unwtd rumble spectrum. However, the new sub-platter brings some 2dB *less* through-bearing rumble on the PRO S at –65.9dB (DIN-B wtd), improving to a very fine –70.5dB when measured through-the-groove. This performance deteriorates very slightly to –68.5dB once Pro-Ject's puck/record weight adds a little extra load to the bearing and 'couples' the LP more effectively onto the platter.

The new S-shaped tonearm features a four-point cardan bearing, a decoupled counterweight system and one-piece alloy tube with SME-style detachable headshell/cartridge mount. This also reduces its effective mass to 8g – ideal for high compliance MMs. S-shaped tubes typically have more complex resonances than straight beams, and so it is here with the rather 'lively' series of modes beginning with a main flex at 105Hz, and harmonics at 200Hz/280Hz, followed by a cluster of other bending/torsional modes from 440Hz-760Hz [see CSD waterfall, below]. The sharp but quickly dissipated break at 960Hz looks to be associated with the long, end-of-arm fingerlift. Otherwise the arm bearings are impressively free of play and friction is just ~10mg. **PM**



ABOVE: Wow and flutter re. 3150Hz tone at 5cm/sec using Pro-Ject's flat belt (plotted ±150Hz)



ABOVE: Cumulative tonearm resonant decay spectrum, illustrating various bearing, pillar and 'tube' vibration modes spanning 100Hz-10kHz over 40msec

HI-FI NEWS SPECIFICATIONS

Turntable speed error at 33.33rpm	33.31rpm (–0.06%)
Time to audible stabilisation	3-4sec
Peak Wow/Flutter (Peak wtd)	0.02% / 0.04%
Rumble (silent groove, DIN B wtd)	–70.5dB (–68.5dB with weight)
Rumble (through bearing, DIN B wtd)	–65.9dB
Hum & Noise (unwtd, rel. to 5cm/sec)	–57.9dB
Power Consumption	5-8W (1W standby)
Dimensions (WHD, with lid) / **Weight**	462x145x345mm / 7kg

Integrated amplifier/DAC with MM/MC input. Rated at 60W/8ohm
Made by: Emotiva Audio Corporation, Tennessee, USA
Supplied by: Karma AV, York
Telephone: 01423 358846
Web: https://emotiva.com; www.karma-av.co.uk
Price: £669

Emotiva BasX TA1

Better known for high-end behemoths, the US is also home to high-value hi-fi from Emotiva. We pick up the story as the feature-rich TA1 integrated replaces the TA-100

Review: **Mark Craven** Lab: **Paul Miller**

The general consensus is that film sequels are rarely as good as the original, the likes of *The Godfather Part II* being an honourable exception. In consumer electronics, on the other hand, any follow-up simply has to better its predecessor to justify its existence. This is the aim of Emotiva with its BasX TA1 integrated amplifier, a refresh of the earlier BasX TA-100 [*HFN* Apr '19]. Yet unlike many Hollywood studios, it's been careful not to erase fond memories of the original in favour of a full franchise reboot. There's an awful lot about the TA1 that is identical to its predecessor.

That includes the price, for while £669 is more than the TA-100's £599 you might argue that the difference is fully absorbed by problems with supply chains, transportation, materials costs and inflation. Neither has the self-styled 'modern design aesthetic' been radically altered, so while the TA1 still isn't exactly an *objet d'art*, and there's no swish silver finish available, there's still a pleasing minimalism to the design that draws your attention to the wide, blue VFD display and illuminated volume/menu/tuning knob.

SMART WORK

Did I say tuning? Yes, just like the TA-100, the TA1 is a stereo receiver, with an FM tuner supported by an external aerial. This is one such area where Emotiva has implemented an upgrade, now enabling presets to be entered via the unit's remote control [see p73]. In the process, though, it has reduced the number of available memory slots from 50 to 15. I can't see anyone viewing that as a dealbreaker.

More welcome for this do-it-all model is the inclusion of a Bluetooth receiver (v5.0, with AptX, AptX HD and AAC support), so those who want to stream direct to the amp from a smartphone or computer are no longer asked to buy an optional Bluetooth plug-in. This makes the TA1 semi-smart, its lack of genuine network audio compatibility countered by the inclusion of a USB-B input for 192kHz/24-bit playback.

The DAC stage of the TA1 remains the same, utilising the 'legendary' – says Emotiva – Analog Devices AD1955. This also handles the amp's coaxial and optical digital audio inputs, again to 192kHz/24-bit. To the right of these digital connections on the rear panel [see p73] is a 12V trigger port, and a single set of chunky speaker binding posts. To the left is a bank of analogue inputs and outputs that is very well specified for the price. For example, a phono stage supports both MM and MC cartridges via a gain selector, and there are stereo/mono subwoofer pre-outs for integrating a dedicated bassmaker. An additional line-level output is joined by two further RCA inputs, labelled 'CD' and 'Aux'.

American brand Emotiva was originally established by Dan Laufman with the aim of selling via traditional retail outlets, but it soon embraced a web-based model, in the US at least, cutting out any middlemen and honing its pricing still further. Its BasX range, as the name suggests, is its entry-level. Yet outwardly there's not much indication of a cost-conscious build as the TA1 gets a neat, brushed aluminium faceplate and a sturdy construction.

SEEING DOUBLE

Internally, as with the TA-100, Emotiva says it employs a 'highly optimised circuit layout' [see pic, below] using double-sided PCBs. Once again its power comes from a heavyweight linear power supply allied to an 'audiophile' Class AB amp. This newer model also claims to offer a modest uptick in grunt from 50W/8ohm to 60W/8ohm [see PM's Lab Report, p73].

Installation into a hi-fi system shouldn't pose any problems, particularly as the TA1 is usefully slender (just 67mm high) but Emotiva does lay on some nice touches

RIGHT: One pair of power transistors (per channel) are bolted onto the TA1's small internal heatsink [right], all fed from a beefy linear PSU [left]. A daughter board [top right] handles input switching and the AD1955 DAC-based preamp

ABOVE: Still deceptively simple, the new TA1 features an elongated display strip, two tiny selection buttons and a click/twist rotary encoder for tuning, volume and navigation

within the amp's – now redesigned – onboard menus, including dimming of the VFD display, bass, treble and balance controls, and mono blending of FM radio (to counter weak signals). The amplifier also stores the volume setting of its main (speaker) output and that of its front-panel headphone socket, to stop you accidentally blowing out your eardrums.

Menu adjustments can be tackled via the amp's display, rotary encoder and small input selection keys, but the remote is a more convenient alternative. Yet I'm tempted to classify this latest, plastic handset as a 'cut corner', even if it now includes buttons to switch easily between analogue, digital (including BT) and FM inputs – an oversight we highlighted in our BasX TA-100 review.

EMOTIONAL RESCUE

My first experience of Emotiva was with one of its higher-spec monoblock amplifiers, the Class H-based XPA-HC1 [*HFN* Sep '20], which claims a hefty 300W/8ohm output. That was a purposeful-looking, but also affordable, amplifier that impressed me with its bang-for-buck ability. The BasX TA1 integrated, while a different kettle of fish in both design and specification, offers that same feeling of value for money. Its sound is powerful and detailed enough to appeal, even before you remember the amp's relatively wide-ranging feature set.

> 'The grin on my face pointed to the TA1's musical chops'

The new onboard Bluetooth receiver might get short shrift from dyed-in-the-wool audiophiles, but I'm not one to turn my nose up at ease-of-use, and found the TA1 sounded in good form with wireless streams. Led Zeppelin's 'Communication Breakdown' from their eponymous debut album [Atlantic; 48kHz/24-bit Tidal] enjoyed a cutting edge to Jimmy Page's proto-heavy metal riffs, and a well-rounded bass that did justice to John Bonham and John Paul Jones' fast and furious rhythm section. If the point of music is to evoke an emotional response, then the grin across my face pointed to the TA1's musical chops.

This is not to say that Emotiva's budget integrated gets everything right. There was a lack of body to the upper-range presentation of this Led Zep piece, noticeable in the slightly harsh feel it acquired with Page's solo, and something that became more obvious with 'Quatro (World Drifts In)', the opening track from Robert Plant and Alison Krauss's *Raise The Roof* album [Deluxe Edition; Warner Music UK download, 44.1kHz/16-bit]. This song opens with sweet-sounding acoustic guitar, quickly accompanied by softly struck percussion and then both singers in gorgeous harmony – a smorgasbord of textures and tones, with tiny details, that the TA1 struggled to fully explore.

Make use of its wired digital or analogue inputs, however, and this amp can be cajoled into sounding a bit more mature. The Krauss/Plant country ballad, now via 96kHz/24-bit FLAC into the USB port, gained an edge of top-end clarity which resulted in a better feeling of balance, all the while retaining a driving force that stamped authority on the relentless drumming that carries the song.

ON MY RADIO

And what of the FM tuner? It's been some time since I listened to any analogue radio, even though the TA1 uses a digital decoder, as my usual ports of call are DAB or Internet, so I was (perhaps foolishly) surprised by how clean and crisp it sounded. Scanning frequencies, and saving presets, isn't a quick-fire process however, and having to either wait for a station ident or Google a frequency number to work out which station you're listening to felt like a step back in time. Still, the Emotiva TA1's FM feature is certainly one that can be filed away under 'nice to have'.

VALUE CULTURE

Tennessee-based Emotiva has a product range that covers both hi-fi and home cinema markets, all designed to hit the high-performance/affordable price sweetspot. Design is undertaken at its US facilities, as is the manufacturing of some top-tier models, while others are assembled by 'efficient manufacturing partners' in China and elsewhere. The company also sells speakers and subs, the former in an extensive 'Airmotiv' series where folded ribbon tweeters are a *cause célèbre*. The three-way T2+ floorstander tops the range, joined by two further floorstanders, plus bookshelf, surround, Dolby Atmos and in-ceiling options – all complemented by Emotiva's collection of multichannel processors.

For hi-fi shoppers, Emotiva offers stereo and monoblock power amplifiers, preamps, and integrated models, across two series – BasX and XPA. The former includes the £569 PT-1, a preamplifier sharing the same design, DAC and tuner elements of the TA1 tested here, and the £599 A1 monoblock, £599 A2 stereo power amp and £379 A2m stereo 'Flex', a compact 20cm-wide design.

Emotiva's XPA series hosts all its flagship products, but the pricing is still real-world. For example, the XPA Gen3 DR-2 is a fully balanced Class AB power amplifier claiming a 2x500W/8ohm output courtesy of a very efficient Class H architecture – and it's pitched at a very reasonable £2249. The XPA chassis also supports modular construction, allowing Emotiva to offer a 'build your own' service where stereo or mono amp modules can be selected for output solutions ranging from stereo to 14-channel. Filling out the brand's stable is a balanced output CD player (the ERC-4, at £699), the Airmotiv series GR1 headphones for £379, and two 384kHz/32-bit USB DACs – the Big Ego+ (£99) and Little Ego+ (£65). 'Something for everyone' should, perhaps, be Emotiva's mantra!

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ABOVE: Two line inputs and MM/MC phono are joined by low-pass (sub) and line outputs, all on RCAs. Optical, coaxial and USB-B digital inputs (192kHz/24-bit) are joined by FM and BT antenna(s). Speaker outputs are via 4mm binding posts

Partnered with a pair of compact GoldenEar BRX speakers [*HFN* Sep '22], the amp's upbeat tuning dovetailed well with these standmounts' superior bass punch. There's perhaps a price discrepancy here, the TA1 selling for less than half the BRX duo, but I liked how it wasn't fazed by these moderately demanding speakers.

Meanwhile, aiming more downmarket with some Q Acoustics 3010i bookshelf models worked well, too. Replacing the GoldenEar's folded AMT tweeters with common-or-garden soft domes rounded out the treble, trading the at-times brash detail for a sound that was smoother, if less insightful. The Rolling Stones' 'Let It Loose' [*Exile On Main Street*, Virgin/Rolling Stones Records CDV2731] came across as a dreamy, ethereal smoosh of warm guitar and keyboards.

DELICIOUSLY DEEP

Regardless of chosen speakers, the BasX TA1 was at its best when fed music with dynamic peaks and troughs and a robust bottom end, as it's here you feel you're getting the most value from its punchy amp stage. 'Chilli Daddy', from Koan Sound's *Max Out* EP [Shoshin HIN001], was presented as a powerful flurry of slap-bass, glitchy electronic rhythms and deliciously deep synth notes. Cranking the volume boosted my enjoyment and didn't add anything untoward to the amp's already somewhat splashy treble. (As an aside, the remote control is intuitive and the amp is very responsive.)

LEFT: New BPR-2 remote offers control over the amp's configuration menu plus input selection, volume and mute

In general, the TA1's performance is of the crowd-pleasing nature you'd expect from a feature-packed integrated at this price – it plays loud and low, has tangible driving ability, and snaps into detail. Depth of soundstage is also handled well, ensuring The Allman Brothers Band's *At Filmore East* [Mercury 0600753270240] comes across like the live recording it is. But the amp doesn't spread the sound particularly wide, meaning that, on the epic-length 'Mountain Jam', there's a suggestion of the players fighting for the spotlight.

This, and the TA1's lack of real richness and smoothness in mids and highs are where its sonic aspirations come face to face with its price tag. Yet I'll end on a high, as the amplifier deserves it – Warren G's hip-hop hit 'Regulate' [Violator Records 523 335-2] sounded as vibrant and bouncy as its producers intended, the TA1 digging up warm, room-filling bass and projecting the soul-inflected vocals right at me. That so much energy was coming from a slim, black box was an eye-opener.

HI-FI NEWS VERDICT

As a slimline, feature-rich, value-for-money offering, Emotiva's BasX TA1 doesn't really put a foot wrong. Yes, there are limits to its performance, but these are commensurate with the price point, while connectivity, usability and fit and finish are all excellent. Cost-conscious buyers with varied listening diets (Bluetooth streaming one day, vinyl the next?) could do far worse than bag a demonstration.

Sound Quality: 83%

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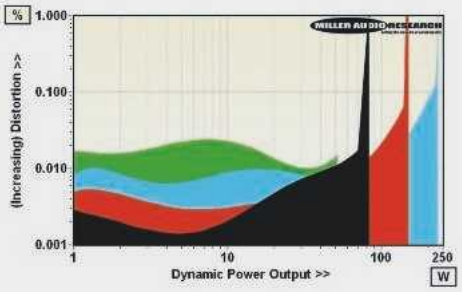
LAB REPORT

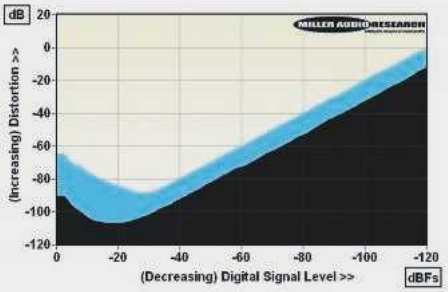
EMOTIVA BASX TA1

While Emotiva has changed the TA1's power rating to 60W/8ohm over the older TA-100's 50W/8ohm, it is careful not to suggest the Class A/B power amp or PSU is any bigger! In practice, those 'tweaked' analogue specifications for the TA1 look to have been brought into line with those we published for the TA-100 [*HFN* Apr '19]. Specifically, the TA-100 achieved 2x63W/8ohm and 2x95W/4ohm and the TA1 matches this at 2x63W/8ohm and 2x93W/4ohm. Under dynamic conditions the TA-100 stretched out to 87W, 153W, 234W and 116W into 8, 4, 2 and 1ohm loads, respectively, while the TA1 achieves 85W, 151W, 234W and 52W under identical conditions [see Graph 1], the latter figure now cut short by electronic protection. So there have been *some* changes... Gain is unaltered at +41.6dB but the TA1 is a little less noisy and the A-wtd S/N wider at 90.5dB vs. 88.9dB (re. 0dBW). Distortion is the same – the TA1 still showing higher THD on the left than right channel, the latter holding to within 0.01% from 1W-50W/1kHz and 0.0025-0.03%/1W from 20Hz-20kHz. The –3dB response limits remain at 3Hz-75kHz.

Tested via its preamp output, the AD1955-based digital stage achieves a maximum 3.98V output (at 0dBFs) supported by a wide 111.1dB A-wtd S/N ratio and an impressively low <1ohm output impedance (again, increasing to 17ohm/20Hz). Distortion reaches a maximum of 0.005-0.095% (20Hz-20kHz) at 0dBFs and a minimum of 0.0003-0.003% over the top 30dB of its range [Graph 2, below]. The standard linear phase digital filter offers a 77dB stopband rejection and response limits of –0.2dB/20kHz (CD/48kHz data), –2.0dB/45kHz and –5.9dB/90kHz (96kHz and 192kHz data). Jitter remains <200psec for all sample rates. **PM**



ABOVE: Dynamic power versus distortion into 8ohm (black trace), 4ohm (red), 2ohm (green) and 1ohm (cyan) speaker loads. Maximum current is 10.8A



ABOVE: Distortion vs. digital signal level over a 120dB dynamic range (preamp out), 1kHz (black); 20kHz (blue)

HI-FI NEWS SPECIFICATIONS

Continuous power (<1% THD, 8/4ohm)	63W / 93W
Dynamic power (<1% THD, 8/4/2/1ohm)	85W / 151W / 234W / 52W
Output impedance (20Hz–20kHz)	0.033-0.037ohm (0.8-17ohm, pre)
Freq. resp. (20Hz–20kHz/100kHz)	–0.1 to –0.25dB/–4.8dB
Digital jitter (S/PDIF at 48kHz/96kHz)	135psec / 190psec
A-wtd S/N ratio (re. 0dBW/0dBFs)	90.5dB (Analogue) / 111.1dB (Dig)
Distortion (20Hz-20kHz; 0dBW/0dBFs)	0.0025-0.03% / 0.005-0.095%
Power consumption (idle/rated o/p)	11W / 195W (2W standby)
Dimensions (WHD) / **Weight**	432x67x330mm / 6.8kg

LP eccentricity correction system
Made by: Digital Stream Corporation, Kanagawa, Japan
Supplied by: Soundfowndations Ltd, Berks
Telephone: 0118 9814238
Web: www.ds-audio-w.biz; www.soundfowndations.co.uk
Price: £5500

DS Audio ES-001

Ever worried about off-centre LP pressings? Neither did we – until we tried DS Audio's mind-boggling ES-001 Eccentricity Detection (and correction) Stabiliser

Review: **Ken Kessler** & **Paul Miller**

As I stated in a recent column: I'll no longer be making apologies for high-end pricing. So £5500 is needed to acquire the DS Audio ES-001 Eccentricity Detection Stabiliser, a highly specialised device that allows for the correction of off-centre pressings. It is, I believe, the first attempt at resolving this issue since the demise of Nakamichi's TX-1000 and Dragon CT turntables (1982-1993), which tackled the issue mechanically using a sliding two-part platter [see Vintage Review, *HFN* Aug '16].

'There were gains in attack with staccato trumpet'

But let's get the 'problem' into context, for we are not talking about eccentricity so extreme you can see the headshell weaving left and right. DS Audio argues there's a limit to the accuracy that a vinyl disc can be pressed and centred, with variations typically measured in tens of microns (µm). It also provides examples of how such minuscule deviations can affect performance, not unlike wow and flutter.

CRACKING THE NUT

DS Audio claims an eccentricity of just 0.34mm (340µm) can be equivalent to ~0.15% W&F on the innermost grooves of an LP, which is rather poorer than the inherent speed stability of most high-quality turntables. As for the effects on cartridge and tonearm, any eccentricity, even invisible to the naked eye, could tax the stylus's tracking ability.

By way of solution, the ES-001 measures and then assists in your manual correction of any such 'wobble' [see PM's boxout, right], the display guiding the user to reposition the LP so it is perfectly centred [see screenshots, p75].

RIGHT: The ES-001 comes with a precision reaming tool to enlarge the centre holes of any errant LPs...

Unfortunately, unless you have a deck with an undersized or, better yet, removable spindle as per the Vertere designs [*HFN* Aug '22], this might involve enlarging the LP's hole. As extreme as this sounds, it is the only solution for some LPs, so the kit comes with a reaming tool for this purpose. Also supplied in the aluminium flight case is a hex wrench, for removing the cover to install two AA batteries (also supplied) and to access the USB update port.

This device is massive, so enthusiasts may be concerned about the possible negative effects of this 80x70mm (wxh) alloy/tungsten cylinder's 620g weight on their turntable's bearings. I certainly wouldn't want it to spend too much time on, say, a £295 featherweight deck, but anyone with £5500 to spend on this accessory will probably own a massively-constructed deck of a commensurately high sticker price. Also the ES-001 is removed when the job is done.

SMART INTERFACE

A power button at the front turns on the top-mounted, touch-sensitive 2.4in display and the red LED detection lights, the former responding instantly to activity when *in situ* on the LP. This is a perfectly implemented interface, but it still requires careful reading of the owner's manual.

A two-part object, the ES-001's 6.2mm-thick lower section rotates with the LP, while the user holds the 238mm-tall upper section with access to the display. Place an

GUIDING LIGHT

Among the Digital Stream Corp's many innovations was the development of the optical mouse with Microsoft. Miniature LED technology is also employed in its range of 'optical' pick-up cartridges [*HFN* Nov '15, Jun '17, Dec '17, May '19, Feb '21 and 'Oct 21]. Here the movement of a stylus modulates an LED light source as it falls on a photocell, generating an audio output. And LEDs are once again utilised in DS Audio's latest 'measurement device' to calculate the eccentricity of an LP via its run-out groove. One of two integrated LED emitter/receivers is visible in our picture [above] – red light flooding from one aperture being detected through its reflection into the other. Any cyclical 'wobble' in the lead-out groove is detected as a modulation in this reflected LED light which, in turn, is used to calculate the lateral movement – the eccentricity – of the groove and LP in micrometres (µm). A pair of these emitter/detectors is employed to improve overall accuracy although the effectiveness of the technique will also necessarily be influenced by the *flatness* of the LP. PM

LEFT: An alloy sleeve, held by the user as the LP rotates, conceals the optical devices within. The battery-powered ES-001 is operated via a touch-sensitive colour display, which switches off after a period of inactivity

LP on the platter, the ES-001 on the spindle, switch on while holding the upper section and tap the display to start the measuring cycle. The display is colour-coded, so at first you'll want to keep the manual to hand, ultimately learning to read the results without it.

In seconds, a red cross indicates off-centre status, changing to yellow, then green when the corrected LP is dead centre. This is abetted by the colour of the ring around the display, looking ominously like the crosshairs in *Call Of Duty*. The display, adjustable for brightness, also provides information about the degree of eccentricity. Actually centring an LP after measuring it is easier than it seems, even if you end up using the reaming tool.

TWIST AND SHOUT

Not to minimise one's need for an ES-001, to my dismay – or should that be delight? – I had to assess a number of LPs before finding any that triggered the device's red or yellow codes. New LP after new LP yielded a flow of perfectly, or near-perfectly centred discs within the preferred <20µm range. I couldn't find any errant One-Step or regular Mobile Fidelity, Speakers Corner, Impex or Intervention releases, while even new LPs from major labels were hard to fault.

I have to admit to a childlike glee when I put on a 7in single (small hole type, not the US large hole form) and it immediately lit up with 'The centre is OK' as if I earned a star in a pre-school class. That's the message you hope to elicit each time, but I wonder if some might suffer a pang of disappointment if the device *doesn't* indicate eccentricity? After all, paying this amount, you might subliminally want it to find some wildly off-centre pressings.

However, a few of my LPs did show improvement when centred – specifically heavy rock LPs, with violins, *a cappella* female vocals and the like – all gaining audibly in treble clarity and stereo focus. The former was sweeter and more precise, and I was also impressed by gains in transient attack with staccato trumpet volleys. Another surprise? Sibilance was reduced, even on LPs from the era of the dreaded Aphex Aural Exciter, which elevated the treble.

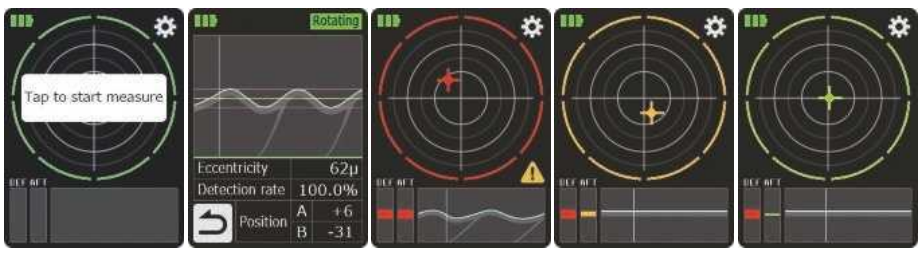
To my mind, the key beneficiaries of perfect centring would be musicians or any who possess perfect pitch, which leaves me out! Instead, it was the palpable improvement in stereo positioning that won me over. Oddly, it was a mono LP which impressed me most with these spatial gains, as the centring of the mono image was even greater after correcting the LP – and that was without using the preamp's mono button. As for two-channel spreads, coherence and image location were even more precise.

BATCH TESTING

Still, you might be wondering why I refuse to 'name and shame' specific LPs. That's because the ES-001 exposed a dilemma which will drive some of you crazy – that of the deviation between two or more copies of the same LP and pressing. In the past I've purchased a few 'identical' LPs precisely for A/B'ing turntables and cartridges but some turned out not to be so identical after all. I won't name them because my pressings might differ from yours, and this exercise is, after all, about inconsistency in manufacturing.

I can see some of you buying an ES-001, taking it to the record store and checking the copies in stock to secure the best – least eccentric – pressing. So the ES-001 will also be a test of LP vendor patience!

BELOW: After measurement the estimated eccentricity is indicated on the colour display in µm. As the LP position is adjusted, the cross mark approaches the centre of the target and the colour changes from red to yellow to green



HI-FI NEWS VERDICT

There's no escaping the price-to-results ratio. This intrinsically places DS Audio's ES-001 in the most exclusive category of high-end audio acquisitions. If – and it's a *huge* 'if' – you have the ears and the gear, then you will find this as indispensable as a dust brush. I cannot stress enough how this intriguing device challenges the Law of Diminishing Returns, but if you live for vinyl and want to extract the best of your LPs, you'd better start saving.

Sound Quality: 90%

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"I recommend a listen to the Stellar to anyone in the market for a new phono preamp, regardless of price. I don't think I've ever written that before." **Michael Fremer - Stereophile, Jan 2020**

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PS Audio introduces the Stellar Strata integrated & M1200 Mono Power amplifiers

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Dvořák
'New World' Symphony (No 9)

From walking sticks to sliced bread... the Ninth has been used to sell everything, not to mention cultural identities. **Peter Quantrill** returns to a landmark of the repertoire

We associate 'cultural cringe' with the reluctant debt felt by Australians towards 'the old country' (the UK), but the term easily fits the rapture shown by the New York public in December 1893 after the hotly awaited premiere of what was greeted as 'the first American symphony'. Department stores began selling 'Antonín Dvořák' shirts, ties and walking sticks. Becoming a brand does not seem entirely to have bemused this butcher's son from Bohemia.

PATRIOT ACT

The 'New World' also launched an American symphonic tradition, with more or less slavish imitations following rapidly in its wake, composed by the likes of Charles Ives, Amy Beach and Florence Price. And Dvořák gave his listeners every reason for their pulses to quicken with patriotic fervour: he had found inspiration, so he said, in the folk culture of his temporarily adopted home and in spirituals such as *Swing low, sweet chariot* alluded to during the symphony's first movement.

Jeannette Thurber, philanthropist and arm-twister, at her desk in 1905

Paul Paray directs the swiftest Ninth on record in equally thrilling Mercury Living Presence sound

What Dvořák *didn't* say at the time – in public, anyway – was that American-Indian and African-American music was practically identical as far as he was concerned, and could just as well be Scottish: it was all (trigger word) 'ethnic' grist to his mill. During a visit to the Minnehaha Falls in Minnesota he came up with the much-abused theme of the *Largo*, and he seems to have planned the Ninth as a 'Hiawatha' symphony after the epic poem by Longfellow. The notion of the 'noble savage' embraced by both poet and composer has had its day, and the Ninth would probably be cancelled by now had Dvořák not wisely kicked over the traces.

> 'Surely Mahler borrowed from the *Largo* for his own *Ninth*'

Some of them, anyway. The Ninth shares its key of E minor with the Fourth of Brahms – always Dvořák's prime symphonic exemplar – as well as the scoring of the Scherzo with triangle. Handled gently rather than hustled through, the movement's trio evokes the ineffable nostalgia at the same point in Schubert's 'Great' C major. The A-B-A-B-A form (new for Dvořák, at least symphonically, with what amounts to a separate C episode during A) looks back to mid-period Beethoven and Mendelssohn.

None of this is especially American. And indeed Dvořák had been brought across the Atlantic in 1892 with his qualms settled by the promise of a great deal of money and the assurance that he could be just who he was, a Czech composer.

Writing the cheques was the formidable Jeannette M Thurber, founding president (in 1885) of the National Conservatory of Music in New York. She offered ten times his teaching salary in Prague on a two-year contract to become the conservatory's director, but he still haggled for the next seven months and eventually put it to a family vote. 'Mrs Dvořák and my eldest daughter, Otilie, are very anxious to see Amerika', he reported back to Thurber, and that was that.

TROUBLE BREWING

However, Thurber was spending her coffee-merchant's husband's money, which began running out just before the premiere of the 'New World' when his firm went bust. Dvořák maintained friendly terms and continued teaching while waiting for his salary payments to catch up, but he sailed back to Europe for a holiday in 1895 and politely declined to return. So much for the 'New World' as a symphonic note of homesickness.

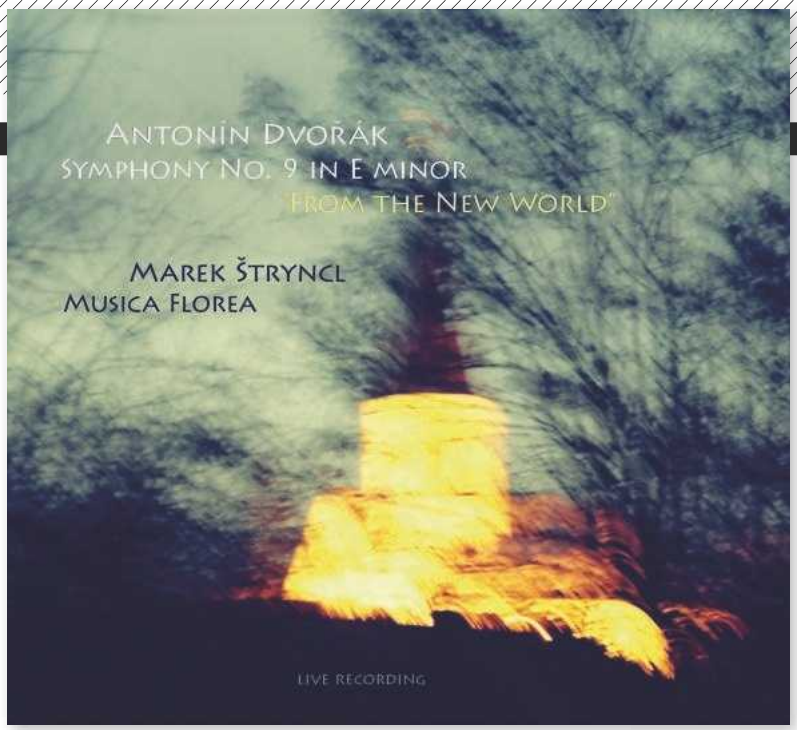
How you hear it says as much about you as the piece. I hear it as wholly Czech, no less than the previous eight symphonies, looser in profile than Nos 7 or 8 (especially in the Russian-style finale, which substitutes elaborated repetition for development) but touched with points of genius such as the silences before the close of the *Largo*, which Mahler must surely have borrowed for the end of his own Ninth.

With its often weak first and strong second beats, Dvořák's rhythmic signature is inimitably Czech: an authenticator app, locking out most non-native and/or high-gloss recordings made by celebrities of the podium whose recordings of the 'New World' tell us more about them than they do about the piece (looking at you, Herbert von K). The 18-minute elegy of Bernstein's farewell Ninth in Israel (DG) is a guilty pleasure, but his '60s NYPO version (Sony) wears its years well for the care taken over hotspots such as chording and phrasing the brass chorale to open the *Largo*.

Modern listeners and interpreters (Dudamel on DG, Urbanski on Alpha) who are in search of maximum hi-def contrasts might bear in mind, too, that Dvořák's *pianissimi* and *fortissimi* are not the same as Brahms's, or Mahler's or anyone else's. Listening to generations of Czech-made performances makes clear that the slopes between soft valleys and loud peaks are gentler – grassier, even. The orchestral palettes of most German orchestras, even under Kubelík and Nelsons, are too dark and dense, though the Bamberg SO has made a pair of marvellously outgoing modern Ninths under Jakub Hrůša (Accentus) and Robin Ticciati (Tudor).

Jos Van Immerseel, the Belgian harpsichordist and stylish Dvořákian

It follows that my subjective choice of 'Essential Recordings' [see opposite] could have been filled with Supraphon albums. That would be unfair on those listed, as well as a clutch of underrated but wholly idiomatic versions with British orchestras: LSO/Rowicki (Philips), LPO/Macal (CfP/Warner) and RLPO/Pešek (Virgin/Warner). Duff acoustics and engineering compromise Andrew Davis's beautifully pointed account from Toronto (Sony).



Arty from Arta: a little-known Czech label has produced the first native period-instrument cycle of Dvořák symphonies, and it's a winner

HORNS OF PLENTY

Period ensembles and conductors have been slow to embrace Dvořák, but the rewards of a historically informed sensibility in the piece are immediately apparent in the glowing horns of Immerseel's Anima Eterna ensemble (Alpha), the chirping flutes, bubbling clarinets and pliant strings: a big improvement on the acid palette of Krivine's Chambre Philharmonique (Naïve). Even more than Harnoncourt, Norrington (Hänssler) and Dausgaard (BIS) paradoxically bring the piece closer to Mahler than to Brahms – as it should be, from 1894 – with flexible phrasing which underlines the *furiant* character of the Scherzo while playing the bombast of the finale with a light hand.

With a 30-year background in performing Czech Baroque and Classical repertoire, the Prague-based Musica Florea under their founder Marek Štryncl unite both varieties of authenticity, and the result is a joy. Nostalgia is always counterbalanced by a fierce sense of purpose and momentum. I love the snap of the finale's opening, its sense of pride and defiance without breast-beating, and Štryncl's freedom in turning up the heat for the second theme. Whichever world it comes from, this is a Ninth that sounds new in every bar.

ESSENTIAL RECORDINGS

Czech PO/Talich
Supraphon SU38332
Dim mono and wobbly pitch, but this 1954 version still takes a snapshot of Dvořák's (new) world as vividly present as any other.

Czech PO/Ančerl
Supraphon SU36622
Sounding taut and fiery as ever in up-front Iron-Curtain stereo from 1961, with a deeply invested but songful *Largo*.

Prague SO/Mackerras
Supraphon SU38482 (CD) SU43011 (3LPs)
Richness and depth for the vinyl remaster of Mackerras's final recorded thoughts on a piece he'd conducted for half a century.

Detroit SO/Paray
Mercury/Presto 4343172 (1CD), Eloquence 4843318 (22CDs)
A wild ride, gripped with tension throughout, sounding better than ever in the new 'Mercury Masters' Paul Paray box set.

RCOA/Harnoncourt
Warner 9029673082 (LP)
Opulent 'Old World' colours from Amsterdam, newly minted, score-led but always affectionate shaping from the conductor.

Musica Florea/Štryncl
Arta F10230
A live, up-to-the-minute and ear-opening 'New World' full of local colour and drama.

STEVE SUTHERLAND

Steve edited NME from 1992-2000, the Britpop years, launching NME.com and reviving the NME Awards. Previously he was Assistant Editor on Melody Maker. Among his many adventures he has been physically threatened by Axl Rose, hung out awhile with Jerry Garcia and had a drink or two with Keith Richards...

The Staple Singers
Be Altitude: Respect...

This uplifting R&B and gospel album from the family band was the highlight of a long career, evangelises **Steve Sutherland** as he hears the 180g reissue

One of last year's musical highlights was the release of *Summer Of Soul*, the documentary lovingly assembled by Questlove about the Cultural Festival that took place on six Sundays between June the 29th and August the 24th 1969 at Mount Morris Park in Harlem, New York.

The Woodstock Festival, just upstate, was also underway at the time, destined to become famous worldwide thanks to the movie and albums that followed. The Harlem event, though filmed, was pretty much lost to history, the footage stored away for over 50 years until discovered and assembled into the documentary.

PRECIOUS MEMORIES

The film is superb from start to finish but if I had to choose peaks, I'd say an imperious Nina Simone's furious 'Backlash Blues' and 'Are You Ready'; The Chambers Brothers grooving through a freewheeling 'Uptown'; Sly & The Family Stone's magnificent 'Sing A Simple Song' and 'Everyday People'; Stevie Wonder just being all-round astonishing; and Mahalia Jackson breathing new life into the gospel standard 'Precious Lord, Take My Hand'.

Jackson was backed dramatically by the Operation Breadbasket Orchestra and Choir, an organization dedicated to improving the economic conditions of black communities across the US. It was a righteous piece of business, directed by Ben Branch who'd been with Martin Luther King Jr just before his assassination in April 1968. In fact, King's last words were purported to be to Branch, asking his friend to play 'Precious Lord, Take My Hand' at a rally to have been held later that day. 'Play it real pretty', King had instructed, and play it real pretty they certainly did at this emotional Harlem gathering.

> 'They had the gift of being both cool and homespun'

Concorde Records press shot of The Staple Singers (l-r) Pops, Cleotha, Pervis and Mavis Staples and (inset) label of the original UK release from 1972 on Stax

Just as she was being introduced to the crowd, Mahalia Jackson, the undisputed Gospel Queen, now 58 but looking and feeling a great deal older, called to her side a singer some 28 years her junior who was lurking at the back of the stage just to get a close glimpse of her hero. Declaring she wasn't feeling quite herself and could do with a little help, Jackson encouraged her devotee to share vocals, and the pair went ahead and endowed that famous old hymn with a ferocious spiritual zeal (when I first saw it in the cinema, it reduced the audience to tears). On the Harlem stage it was as if a torch was being handed down to a new generation, and its inheritor was Mavis Staples. She went on to hold it high and do it proud.

Like Ms Jackson, Ms Staples was brought up in the church. She spread the good word via The Staple Singers, a family group formed in the early 1950s by her father Roebuck 'Pops' Staples, a tasty guitarist, dapper dresser and upright citizen who was wonderfully adept at matching Christian values with modern ideals.

RAW 'N' FOLKY

Keeping the faith but moving with the times, their early recordings were raw and folky. One album, *Uncloudy Day*, found even a young Bob Dylan flummoxed. 'It was the most mysterious thing I'd ever heard...' he recalled. 'I'd think about them even at my school desk... Mavis looked to be about the same age as me in her picture [on the cover]... Her singing just knocked me out.'

By the early 1970s The Staple Singers were a major power for good, active participants in the civil rights movement which they soundtracked with not only gospel numbers but covers of songs that warned there'd better be some changes or else. Check out their versions of Buffalo Springfield's 'For What It's Worth' and Dylan's 'A Hard Rain's Gonna Fall' – both the match of the originals.

Priced £29.99, the 180g reissue of *Be Altitude: Respect Yourself* can be bought online at *www.craftrecordings.co.uk*

At the end of the '60s the group moved up a further notch, signing to the prestigious Stax label where they recorded their excellent secular hit 'Heavy Makes You Happy (Sha-Na-Boom-Boom)', which had been a big success in the UK for Bobby Bloom. Then came their most popular LP, *Be Altitude: Respect Yourself*, which chimed perfectly with the zeitgeist.

BIBLICAL EPIC

This record was named after the passage in Matthew 5 in the Bible, which is known as the Eight Beatitudes and introduces the Sermon On The Mount. It's the one that goes: 'Blessed are the poor in spirit, for theirs is the kingdom of heaven. Blessed are those who mourn, for they will be comforted. Blessed are the meek, for they will inherit the earth. Blessed are those who hunger and thirst for righteousness, for they will be filled...'. And it neatly illustrates The Staple Singers' *modus operandi* – songs which spell out the travails of long suffering under discriminatory laws, the dreadful plight of the impoverished and the temptation to stray from the straight and narrow, but all delivered in an upbeat manner, and with a positive outlook and a call to action. Like treating a wound with honey.

Pops poses in front of (l-r) Cleotha, Yvonne and Mavis Staples

Produced and arranged by the Stax label's co-owner Al Bell, beautifully engineered by Terry Manning and backed by the peerless Muscle Shoals Rhythm Section and Memphis Horns, the album's funky groovers 'This World', 'I'll Take You There' and 'Respect Yourself' were big chart hits, positioning the group among the soul elite alongside Aretha Franklin, James Brown, Isaac Hayes, Marvin Gaye, Curtis Mayfield *et al*. Side B opener 'We The People' was later adopted as one of the themes behind Joe Biden's successful 2020 presidential election campaign.

SPREADING THE WORD

The Staple Singers had the gift of being both homespun and cool, anciently rooted yet hip and contemporary, their appeal naturally traversing age, race and creed. The songs on this 1972 album are, by and large, sermons – but they never sound preachy. Instead, they sound truthful, angry, determined, dignified, and full of hope.

The group continued the good work spreading the word, encouraging pride and helping lift people up, but they never bettered *Be Altitude*. There were other highs – they had a No 1 hit with 'Let's Do It Again' on Curtis Mayfield's Curtom label once Stax went bankrupt, appeared in The Band's farewell movie, 1976's *The Last Waltz*, performing a stonking version of 'The Weight', and were inducted into the Rock And Roll Hall Of Fame in 1999.

But Pops passed away in 2000, aged 85, and Mavis is the sole Staple Singer now left on the planet to carry on the mission. Her latest album, *Carry Me Home*, recorded with The Band's Levon Helm in 2011 just before he died, was released on the US independent label Anti earlier this year.

Her light shines on.

RE-RELEASE VERDICT

To celebrate the 50th anniversary of The Staple Singers' *Be Altitude: Respect Yourself,* Craft Records/Stax has reissued the LP on 180g vinyl with gatefold sleeve and the original album artwork [*50th Anniversary Edition*, CR00511] – its first re-release on the format since 1987. 'All-analogue' mastering/vinyl cutting, using the original stereo tapes from the record's Muscle Shoals Sound Studios sessions, has been undertaken by Jeff Powell at Memphis's Take Out Vinyl. *HFN*

Sound Quality: 85%

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The Stranglers *The Raven*

Psychedelic rockers? Punks? Flag-bearers for the New Wave? This fourth album from the UK quartet proved they could be all of the above and now ranks as one of their best, even if it meant their regular producer would walk away, saying they were 'losing it'

Words: **Mike Barnes**

In 1976 The Stranglers were a fixture on the pub rock circuit and were also in at the very start of punk, supporting The Ramones on their historic first UK date in July that year. But while they developed in parallel to this new wave in music and were certainly associated with it, they didn't really fit in.

Punk musicians would proudly claim that they had only started playing recently, implying they couldn't have been influenced by prog rock and other styles now deemed uncool. The Stranglers made a few concessions to the prevailing trends by also claiming, rather unconvincingly, to have only recently started making music, and embracing punk fashion by ridding themselves of their long hair and flares. But the truth was that they had been around since 1974, could certainly play a bit, and were clearly older than their peers.

POTENT CHEMISTRY

The Stranglers – formerly The Guildford Stranglers – had always been somewhat out of place, playing tough rock 'n' roll influenced by psychedelia and '60s garage bands in the heyday of progressive rock. Guitarist and singer Hugh Cornwell had been in a school band with another guitarist, folk rock legend Richard Thompson; bass guitarist and vocalist Jean-Jacques Burnel had studied classical guitar; keyboard player Dave Greenfield, who joined in 1975, had been in a couple of also-ran prog rock bands and played military bases in Germany; and drummer Brian Duffy, *aka* Jet Black, had played jazz in the '60s, before taking a break from music to concentrate on building up a fleet of ice cream vans in Guildford. For the first couple of years of The Stranglers, he transported the band's gear in one of the vans.

The quartet had a peculiar but potent chemistry. Cornwell was a dextrous lead guitarist and an intense, incisive rhythm player, and Jet Black was a solid drummer with quite a light touch and given to the occasional speedy flourish.

Label for side 1 of the original UK LP from 1979, which appeared on United Artists [UAG 30602]

The band in 1977 (l-r): Dave Greenfield (keyboards and vocals), Jet Black (drums), Jean-Jacques Burnel (bass), and Hugh Cornwell (guitar and vocals)

On stage in Germany in 1977 – singer Hugh Cornwell (left) and Jet Black behind the drum kit

The band's bass player Jean-Jacques Burnel initially trained as a classical guitarist

But what really set them apart were the bass and keyboards. Burnel chose a snarling, swaggering bass sound while Greenfield played swirling lines on the organ and synth, evoking Ray Manzarek of The Doors – a connection that was strenuously denied. Greenfield has gone on to say that his speedy, rippling arpeggios were actually more indebted to Rick Wakeman of Yes.

Once they really hit their stride in 1977, The Stranglers were more successful than most of their punkier contemporaries and relished the fact they were a different proposition. Jet Black was then revealed to be a positively geriatric 39 years old.

> 'They mixed pop tunes with revved-up rock'

NEW WAVE HEROES

The group's debut album *Rattus Norvegicus* came out in the spring of 1977 and climbed to No 4 in the charts, to be followed by a string of Top 10 singles, including the leery, seaside girl-watching song 'Peaches', 'Something Better Change' and 'No More Heroes'.

The Stranglers produced the excitement typical of the best of the New Wave movement, which had been hitherto in increasingly short supply as the '70s progressed. They mixed pop tunes with revved-up rock, while retaining elements of psychedelia, and there was a compelling brutishness to it all, from the band's name through to lyrics which were criticised for being misogynistic. 'Bring On The Nubiles', from their 1977 album *No More Heroes*, was outrageously lewd. When they headlined a show at Battersea Park in September 1978 and their performance of 'Nice 'N' Sleazy' was accompanied by strippers, it only compounded the image. It was deliberately provocative, though it did feature male as well as female strippers.

There was a love of the absurd and a cartoonishness about some of their lyrics as well, particularly the survival anthem, 'Down In The Sewer'. In an era when anti-intellectualism was embraced by some bands, The Stranglers set themselves up as New Wave intellectuals. They were voracious readers and wrote pithy lyrics about

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The group in London in 1985 (l-r): Greenfield, Cornwell, Burnel and Black

Inner sleeve, with image of then Premier of Queensland Joh Bjelke-Petersen, which was later removed

'They were losing it...' – producer Martin Rushent

Taking a bow on stage post-gig in 2020

Original 1979 trade ad for *The Raven* LP

PRODUCTION NOTES

The first three Stranglers albums were recorded at TW Studios in Fulham and produced by Martin Rushent, and he was present at a session in December 1978 that predated the main recording of *The Raven* where 'Fools Rush Out' and 'Yellowcake UF6' – eventual B-side songs – were recorded. Yet when he heard a demo of a new track, 'The Meninblack', he decided that he no longer wanted to work with them. He told journalist Gary Kent, 'I went out the door. I'd just had enough of The Stranglers. They were losing it'.

Alan Winstanley, who had engineered those earlier albums, stepped in and co-produced *The Raven* with the band. 'I declared to the world that I was a producer', he told *Sound On Sound*. The group also changed location, recording at EMI's Pathé Marconi facility in Paris and enjoying both the change of scene and the studio. Burnel has described Pathé Marconi as 'old fashioned',

having vintage equipment that included a 'valved mixing desk'.

The production of *The Raven* has more colour than *Black And White*'s 'slickly produced gloominess', as it was described by critic Gary Sperrazza of US magazine *Trouser Press*. Rushent had been particularly keen on highlighting Burnel's aggressive bass sound, which was dominant on that album. This had caused some tensions with Hugh Cornwell, as it made Burnel stand out from the rest of the group.

Once the tracks had been recorded, operations were moved to Air Studios in London, where Winstanley mixed the album with the assistance of Steve Churchyard, who went on to engineer a number of subsequent Stranglers releases.

historical figures, including Leon Trotsky and the French visionary and seer Nostradamus.

WHO'S LAUGHING?

Burnel wound up journalists by provocatively carrying Adolf Hitler's *Mein Kampf* and they name-dropped Japanese poet and author Yukio Mishima, who committed seppuku – ritual disembowelment – in 1970. But one wonders what his take was on 'Death And Night And Blood (Yukio)' on their third album, 1978's *Black And White,* with its title delivered as a semi-comedic, yobbish terrace chant. At times like this it was difficult to tell what was serious and what wasn't. Were you laughing at them, with them, or were they laughing at you in your confusion?

> 'Burnel chose a snarling, swaggering bass sound'

The Stranglers didn't take criticism too well and built up an intimidating bully-boy image, reinforced by Burnel's karate prowess. As early as 1976, journalist Max Bell had been threatened and later on Jon Savage was punched for a bad review, but their most infamous stunt was luring a French journalist, Philippe Manoeuvre, up the Eiffel Tower where they strapped him to a girder with gaffer tape.

In 1979 the band parted company with their management team, who felt that they were losing direction. The first three albums had been released across 18 months and now there was a gap of that length before the arrival of the fourth. But this was a watershed moment, finding them moving away from the music that had been fuelled by punk and boiled down into the brutal songs on *Black And White*.

Before a new studio recording came a live album, *Live: X-Certificate*, which Burnel described as 'The end of an era... a compilation of the first three albums'. The new songs written for what would be 1979's *The Raven* were more complex, with layered ⇨

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Burnel (left) on stage with Baz Warner, who replaced Hugh Cornwell in 2000 and (below) the band in 2011. Dave Greenfield died in 2020

lines built on terse, interlocking rhythmic elements that nodded back to progressive rock, while songs like album closer 'Genetix' predated '80s synth pop.

NORSE CODE

Both Cornwell and Burnel had worked on solo projects and the band had toured extensively, which fed into their writing. A trip to Japan inspired 'Ice', a track which dealt with seppuku and the Samurai code of honour, while some problems experienced with the authorities in Australia prompted 'Nuclear Device (The Wizard Of Aus)', its titular character being Joh Bjelke-Petersen, the then premier of Queensland who allegedly claimed aboriginal lands to get his hands on uranium. 'All the animals look so strange/All victims of a testing range', sang Cornwell.

Meanwhile, the rise of Ayatollah Khomeni in Iran inspired the scurrilous 'Shah Shah A Go Go', and 'Don't Bring Harry' found Burnel mournfully describing his remorse at his and Cornwell's unfathomable decision to experiment with using heroin. 'With a friend like him I don't need enemies', went the song.

Meninblack' was utterly bizarre, inspired by Jet Black's interest in UFOs. It has echoes of David Bowie's 'Oh! You Pretty Things', where a superior race of aliens visit Earth. 'Information can destroy/So we'll treat you just like toys' sings Burnel, through a vocoder that makes him sound like one of The Smurfs, which rather undermines its seriousness. The title track, meanwhile, refers to the ravens of Norse mythology that perch on Odin's shoulders, and would fly off to gather news. 'Duchess' is a finely crafted single and saw them invited onto *Top Of The Pops*.

> 'The vocoder made Burnel sound like The Smurfs'

The album was their fourth successive Top 5 hit, but further singles from the record fared less well. It could be viewed that The Stranglers had moved away from the New Wave or that as the '80s beckoned the genre was starting to lose its momentum. Either way, the musical landscape was changing.

Now, though, *The Raven* has been recognised as one of the band's finest releases. Although a step down from the high of the first three albums in purely commercial terms, it was artistically successful and helped widen the group's appeal.

In *MOJO* magazine in 2010 it was considered The Stranglers' best album. Burnel, however, would rank it in the 'top three': 'Every song is distinct. All the tracks stand out. The song writing is pretty good and it takes you on a journey'.

Alternate Format Discography

ORIGINAL VINYL LP

The first 20,000 UK copies of *The Raven* featured a lenticular 3D print of the titular bird on the front cover [see p82]. This was more difficult to make than envisaged, however, and eventually a stuffed raven's head was couriered to a company in Japan which had the necessary technology.

There was also a problem with the inner sleeve. Among the artwork and lyrics was a cartoon image of Joh Bjelke-Petersen, the subject of 'Nuclear Device (The Wizard Of Aus)', set behind a map of Australia. He insisted that the image be removed on subsequent pressings.

The offending inner sleeves were included in both the

3D and the standard covers [pictured above] of the initial 1979 pressing. Both versions were on United Artists with the same catalogue number, UAG 30262. The Italian 3D and standard cover [United Artists, UAL 24083] and the Japanese 3D and standard versions [UA GP 765] came out that year.

The 1979 Spanish LP was subtitled 'El Cuervo' [United Artists, 10 C 064-082.740]. A Yugoslavian LP was released in 1980, by United Artists in conjunction with Zagreb-based label Jugoton, now Croatia Records [LSUA 73106, UAG 30262]. The US LP came out in 1985 on EMI America, with a plain inner sleeve [SQ-17190].

A picture disc in a limited edition of 2000 was released in the UK in 2004 on the Let Them Eat Vinyl label [LETV001PD]

CASSETTE VERSIONS

The original UK cassette was released in 1979 with grey shells and off-white labels. It was then re-released in 1985 in this format on Dolby X in the UK on the EMI/Music For Pleasure subsidiary, Fame [A 4131314], and in the US on EMI America, with the original front cover artwork set on a grey background [4XQ-17190].

FIRST CD

The Raven debuted on silver disc in the UK on EMI in 1987 [CDP7 46615 2], with the LP inner sleeve artwork as an insert. The 1980 single 'Bear Cage' was included as a bonus track. A 2001 reissue for UK and Europe also included B-sides 'Fools Rush Out' and 'Yellowcake UF6' (here misspelt 'UFO') and the single 'N'Emmènes Pas Harry'. Another reissue, in 2018, for European territories and Australia featured these tracks plus a live version of 'In The Shadows' and 12in versions of 'Bear Cage' and 'Shah Shah A Go Go' [Parlophone 0190295892487].

AUDIOPHILE VINYL

In 2016, The Stranglers released a 180g remastered double LP of *The Raven* in a limited edition of 1500 on their own label [Not On Label, CGLP4] . This included a 10x10in artwork of the cover. The second LP, named 'Treasures Captured', was pressed on red vinyl and consisted of the extra studio tracks featured on the 2018 Parlophone CD plus BBC Radio 1 session versions of 'Nuclear Device' and 'Genetix'.

Inside the Studio

ÅKE ESON LINDMAN

Polar Studios

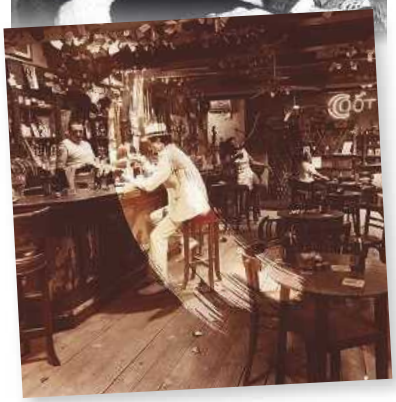
Built originally for pop sensations ABBA, this studio inside a disused cinema has rocked to the sounds of Genesis, The Ramones and Led Zep. **Steve Sutherland** has the story

There were four in the group but most of the time only two made it to the studio. One absentee was holed up in a nearby hotel attempting to kick a drug habit. The other was an alcoholic who could hardly get out of bed and would die soon enough, choking while passed out in a stupor.

STOCK SOLUTION

The other two soldiered on. One was determined to get stuff done, burying himself in the work despite – or maybe because of – the fact he was grieving for the loss of his five-year-old son who'd suddenly died while he'd been away on tour. The other was keen to mess around with his brand new synthesiser.

Polar's Studio A as recreated at the ABBA Museum in Stockholm and (inset) the location of the original studio at the Sportpalatset



Led Zep pictured in 1969 and (right) their 1979 album *In Through The Out Door*

The result turned out to be the band's final album – save for a contract-fulfilling odds and sods collection. And unfortunately it was pretty much garbage. The band was Led Zeppelin, the album *In Through The Out Door*, and the reason I'm recounting all this is because, due to their status as tax exiles back in the winter of 1978, they'd plumped for recording the songs at Polar Studios, the facility built and owned by ABBA in Stockholm, Sweden.

EURO NOTES

Why kick off with Led Zep? Well, I must confess to not exactly being a paid-up member of the ABBA Appreciation Society. Obviously I'm fully aware that there are some who hail Björn Ulvaeus and Benny

KEY RECORDING TIMELINE

1980
Recorded at Polar Studios during late 1979, *Duke* gives Genesis a UK No 1 plus three hit singles

1981
ELO lay down tracks for their ninth studio album, *Time*. On release it proceeds to top the UK albums chart

1983
Joan Armatrading books recording time to work on material for *The Key*. The album peaks at No 10 in the UK

ÅKE ESON LINDMAN

Andersson as pop music genii but none of that hogwash ever… er… washed with me. Even coated in double lashings of kitsch and irony, I've never been able to enjoy what ABBA did (and still do). They always sounded to these ears like Eurovision song-by-numbers practitioners whose far too many hits resembled songs from an Andrew Lloyd Webber musical which, mercifully, never got staged.

I couldn't find any fun in ABBA, nor any real tragedy either. Their numbers were confections to me, betraying not even the merest hint of truth, insight, sincerity or reality. They always sounded like exercises in pop music rather than full-blooded pop itself in all its sobbing exhilarating glory. In short, I found them dull and uninteresting.

CINEMA NOVO

That's not to say, of course, that they didn't know their way around building a studio. And so to Polar. The studio came to be in 1978, a year after Björn, Benny and their manager Stig Anderson took over a disused cinema on the ground floor of a building built in the 1930s at Sankt Eriksgatan 58-60 on Kungsholmen, central Stockholm. It was widely referred to as Sportpalatset (Palace Of Sports) because of an indoor public bath and other sporting facilities which had been housed there.

At first the idea was to create a working environment where ABBA could be creative at their leisure, although it soon became a studio for hire, especially popular for its state-of-the-art equipment and, as we've mentioned, convenience for those looking to avoid paying part of their income to the UK government.

Genesis did their *Duke* LP here in 1980 after Led Zeppelin moved out, and Big Country came over to put together the lion's share of their second LP, *Steeltown*, in 1984. Local disco pop sensation Robyn laid down her debut album, *Robyn Is Here*, partly at Polar in 1995 and, for some unexplained reason, producer Jean Beauvoir, ex of The Plasmatics, flew Joey Ramone in to record and mix his vocals for The Ramones' ninth LP, *Animal Boy*, released in 1986.

ABBA's manager Stig Anderson who helped the band establish Polar Studios

Exhibit at the ABBA Museum of the outfits worn by the group when they won the 1974 Eurovision Song Contest

The band one critic described as 'Thin Lizzy in kilts' – Big Country in 1983

Swedish singer Robyn poses for a press shot in 2008

ABBA on stage in Canada in 1979, and label and sleeve for *Voulez-Vous*, released the same year and the first of three albums they recorded at Polar Studios

PEAK PRACTICE

Most of the time, though, Björn and Benny staked their claim on the premises. At its peak, in 1981, the recording facility consisted of two different sections, one that boasted analogue tape machines and one that implemented new, cutting-edge digital equipment. Studio A featured a Solid State Logic 4056 Series mixing board, coupled with any combination of a Studer A820 24-track, Studer A827 24-track, or 32-track Otari DTR-900 Mk II tape machines. The studio also had four separate isolated rooms, each with varying acoustics.

TOUGH GOING

Meanwhile, Studio B, the 'live' room for musicians to perform in, housed a 48-channel Calrec UA 8000 mixing board, which was paired with a 3M digital 32-track audio recorder. Their pride and joy was a Harrison mixing console – the same as the one used on Michael Jackson's *Thriller* and *Bad* LPs, ⇨

1986
Producer Jean Beauvoir arrives with Joey Ramone to record and then mix vocals for *Animal Boy*. It goes Top 50

1996
Backstreet Boys record songs for their self-titled first album – one of the biggest-selling debuts ever

2001
Emma Bunton works on material for her debut album *A Girl Like Me*. It peaks at No 4 in the UK albums chart

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Type: Standmount inc stands, pair

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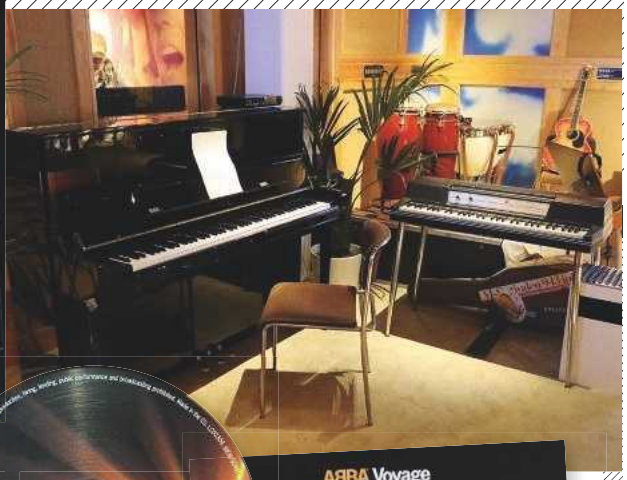
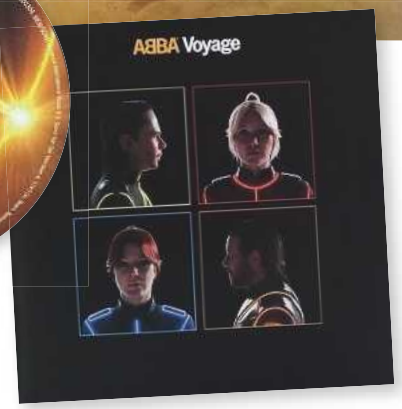


PAVEL TREBUKOV

with the Polar version being modified to give it a sound that resembled a Neve desk.

A trio of ABBA albums were recorded at Polar. The first was *Voulez-Vous*, the band's sixth LP, recorded between March '78 and March '79. It was tough going. After six months of composing, recording and rejecting tracks, the double BB only had two numbers decent enough to make it onto the album.



DIGITAL DIFFICULTY

Agnetha Fältskog, one of ABBA's singers and married to Björn, said: 'I can tell from the look in Björn's eyes when he gets home how the day's work has been. Many times the boys have been working for ten hours without coming up with one single note'. Andersson admitted: 'The prospects are not good. It's worse than ever... We have no idea when we'll be finished'.

What was finished, though, was Agnetha and Björn. They divorced under the stress, so I guess you could say *Voulez-Vous* was ABBA's traumatic equivalent of Fleetwood Mac's legendary big romantic break-up album, *Rumours*, though its primary inspiration was finally found in latching onto the happening Bee Gees-inspired disco craze.

> 'The sound of their digital recorder was too clean'

Next came 1980's *Super Trouper* and, with disco on the wane, the group returned to their more mawkish ballads. Finally, there's 1981's *The Visitors* – the one experts call their darker, more mature and personal album. By now Benny had broken up from his marriage with Anni-Frid Lyngstad, the group's other singer, and the atmosphere was, to put it lightly, strained. 'It could be frosty sometimes', said Björn, the master of understatement.

Another unforeseen problem was that 'their lovely new 32-track digital recorder created a very clean sound, but they found it almost too clean. As the first three tracks had already been recorded using analogue tape, they had to transfer all subsequent tracks from digital to analogue and back again to avoid a difference in quality. When the album finally emerged, it came as one of the very first ever to be released on a revolutionary new format: CD.

By 1984 ABBA had pretty much lost interest in working together and Stig Anderson bought them out of the studio. Rent increases on the lease finally forced Polar to move premises once or twice and it's still running in Stockholm, though on a much less grand scale.

RINGING THE CHANGES

Stig died of a heart attack in 1997 while ABBA kind of reformed last year to record *Voyage*, their first LP in 40 years. Too far gone to actually tour, they've sent out a fake ABBA in the form of avatars to tread the boards and promote the LP.

And in a neat piece of synergy, you can now visit a recreation of Polar Studios at the ABBA Museum in Djurgården, Stockholm where you can see their stage costumes and admire Ring Ring – a special red phone that only the four members of ABBA know the number to.

Agnetha Fältskog and ABBA as pictured at the entrance to the ABBA Museum in Djurgården, Stockholm

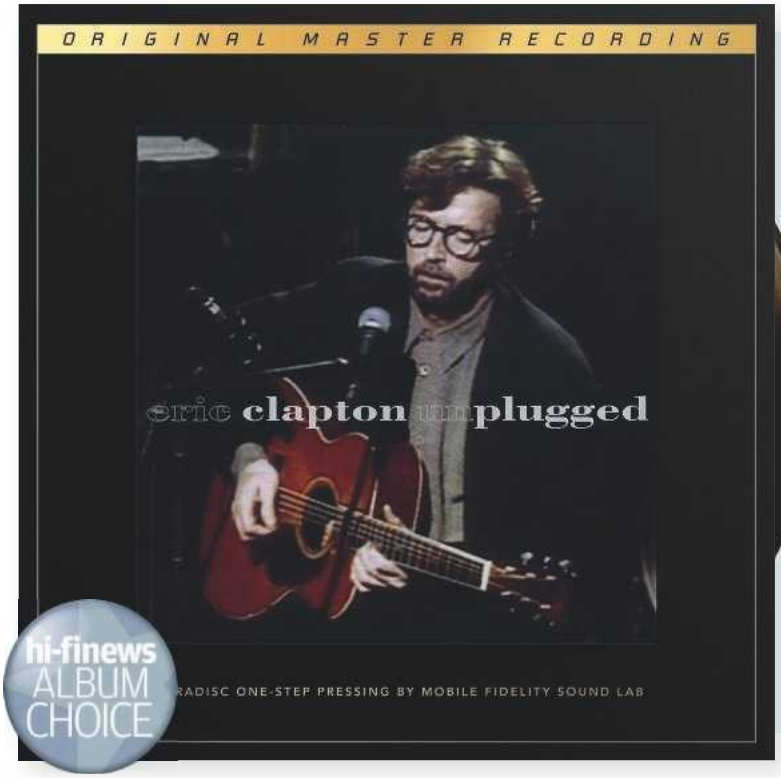
ABBA's Benny and Anni-Frid at Amsterdam's Schipol airport in 1976, while engaged

Congas and keyboards in the Polar live room, as reconstructed at the ABBA Museum

Label and sleeve of *Voyage*, ABBA's first album for four decades, which went on sale earlier this year

Björn, Anni-Frid, Agnetha and Benny in Rotterdam, in October 1979

AUDIOPHILE: VINYL



ERIC CLAPTON
Unplugged

Mobile Fidelity UD1S 2-020 (two 45rpm One-Step LPs)

When released in 1992, this proved a milestone for three reasons. First, regardless of current anti-EC Twitter-trolling because of his politics, it reminded everyone why he was dubbed 'God' at the ripe old age of 20. There's so much to hear in his acoustic work that many forget he does more than electric blues or hard rock. Next came the sound quality, as exceptional as one would expect from a live session. Lastly, it established 'unplugged' as a genre of its own by selling 26 million copies, to become the best-selling live album of all time. This staggering set gilds the lily – it always was worth 90% on any format – and it's as vivid as I have heard. Yes, you will choke up at 'Tears In Heaven'. And 'Layla'? Magical. *KK*

Sound Quality: 90%

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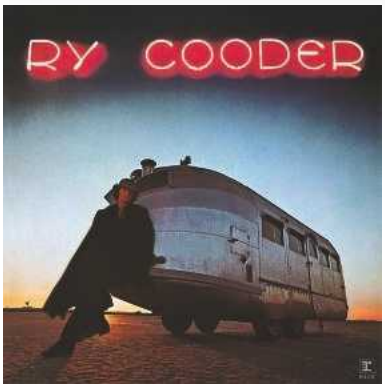

RY COODER
Ry Cooder

Speakers Corner/Reprise RS6402 (180g vinyl)

Ever an audiophile fave, Cooder never fails to delight with his lyrical playing. I was blown away by his slide work on Jagger's 'Memo From Turner', so when this was released three months later, in December 1970, it proved a feast. Abetted by members of The Burritos, The Turtles, Little Feat, and The Mothers, with Van Dyke Parks and Lenny Waronker producing, the results were irresistible. Cooder was, and remains, as eclectic as his UK opposite numbers – Richard Thompson and Albert Lee – so every moment is like a course in musicology, in Cooder's case American roots music and blues. If you love bottleneck and slide, with huge doses of funk and folk, start here. *KK*

Sound Quality: 90%

0 - - - - - - - - - 100

THE JAZZ PASSENGERS
Individually Twisted

Modern Harmonic MH-8239 (coloured vinyl)

Jazz-rock is such a well-established genre that this venture from 1996 with two veteran 'New Wave' deities must have been inevitable. As the cover notes, the guests were Deborah Harry throughout (including a quirky take on Blondie's 'The Tide Is High') and Elvis Costello on two tracks, one of which is a duet with Harry. Like all cool hybrids, this will delight some and irritate others, but its spirit reminds me of the rock artists' 1984 tribute to Thelonius Monk, *That's The Way I Feel* – and I mean that as a compliment. The material covers a number of bases, but overall there's consistency, the sound is superb and Roy Nathanson's fresh liner notes are perfect. *KK*

Sound Quality: 90%

0 - - - - - - - - - 100

RICHARD THOMPSON
(Guitar, Vocal) - A Collection Of Unreleased And Rare Material 1967-1976

Island Records 357 625-9 (two 180g vinyl LPs)

Remastered and on superbly quiet 180g discs, this 45th anniversary reissue covers Thompson's early solo years as well as work with Fairport Convention and ex-wife Linda. A showcase of his versatility, it highlights Thompson's eclecticism while illustrating the evolution of British folk and roots music. Much of it suggests other paths he might have taken, so it's not all finger-in-the-ear droning: material from Emmitt Rhodes, Chuck Berry and Dan Penn & Chips Moman, and a distinctly British rendering of The Byrds' 'The Ballad of Easy Rider'. The sound signature changes with the studios and the years, but overall it's a delight. *KK*

Sound Quality: 85%

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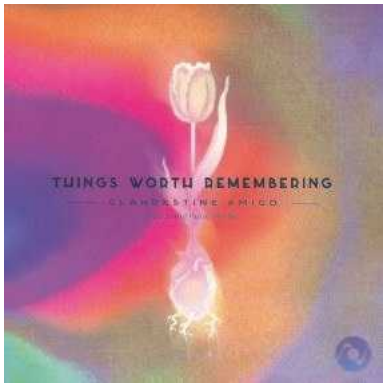

SA DVD

CLANDESTINE AMIGO

Things Worth Remembering

Octave Records OCT-0020 (hybrid SACD + Data DVD)

Clandestine Amigo's second SACD on the Octave Records label features an 'up-and-coming' Denver vocalist named Katie Mintle. A perusal of the notes reveals this is part of Octave's master plan: to discover new talent while producing recordings to dazzle anyone with a high-resolution system. Octave missed an opportunity by not identifying on which tracks she's singing lead, as her vocals aren't all that dissimilar from front-woman Jessica Carson's, but that adds to the audiophile fun. Overall, it's another super-smooth set which older readers might liken to Sade, as the moods it creates are just as seductive. Techno-nerds might start with the Data DVD. *KK*

Sound Quality: 90%

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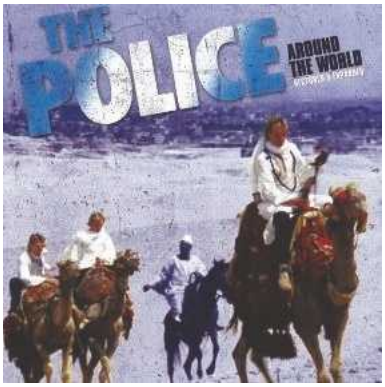

CD BD

THE POLICE

Around The World – Restored & Expanded

Mercury 00602445204540 (CD + Blu-ray)

Police fans have enjoyed the remastering of the group's entire catalogue, but might crave more than a canon of only five studio albums, so this restored audio and video documentary of their first world tour of 1979/80 should satisfy any yearnings. The CD contains tracks from their first two LPs, six recorded in Kyoto, three in Hong Kong and two in Hammersmith – while obviously lacking 'Every Breath You Take' and the other hits which came later. The Blu-ray adds compete performances of 'Walking On the Moon', 'Next To You', 'Message In A Bottle' and 'Born In the 50s' to the one-hour video. (The LP version, MSVL851659, comes with a DVD of the documentary.) *KK*

Sound Quality: 85%

0 - - - - - - - - - 100

CD

MARY WILSON

The Motown Anthology

Motown 00602445379514 (two discs)

Overshadowed by mega-diva Diana Ross while she was a member of The Supremes, the recently-departed Ms Wilson was arguably a better singer. This much-needed, rather touching compilation brings together 38 tracks from The Primettes, which became the Supremes, The Supremes proper, and her solo career, of which 25 songs are either previously unreleased or alternate mixes. This collection eschews the obvious Supremes hits where Ross was the focus, so the real ear-opener is a surprisingly brave cover version: Wilson tackling 'Son Of A Preacher Man'. If you think I'm overstating her brilliance, just wait until you read the testimonials in the copious liner notes. *KK*

Sound Quality: 85%

0 - - - - - - - - - 100

STEELEYE SPAN

Good Times Of Old England: Steeleye Span 1972-1983

Chrysalis CRB1491 (12 discs)

Complementing the roots music feast from fellow traveller Thompson, opposite, this bargain of a box – £40 online – will delight fans of British folk music. Its 145 tracks include all the studio albums from the era, and (deep breath) 47 previously unreleased studio outtakes, two live sets (The Rainbow in 1974 and The Berklee Performance Center, Boston, 1976) and the Australia-only *On Tour*. As with Thompson, this shows greater depth to the band, a shock if you only know 'All Around My Hat'. It's full of surprises beyond the limits of the folk genre, and with bonus tracks sprinkled throughout, even seasoned fans will enjoy frissons of delight. The only shock is that they didn't call it *Goode Tymes Of Olde Englande*. KK

Sound Quality: 90%

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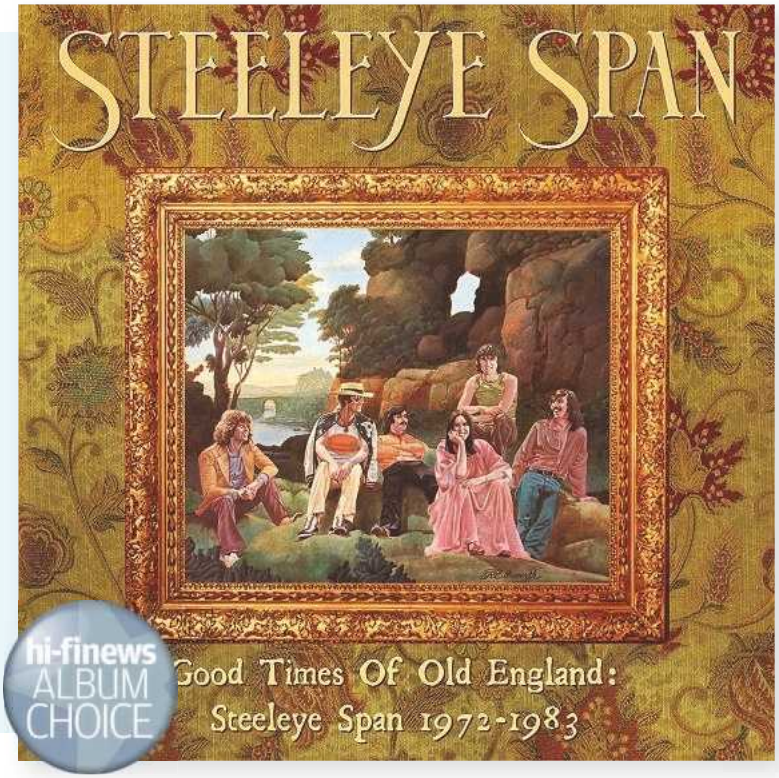

CD

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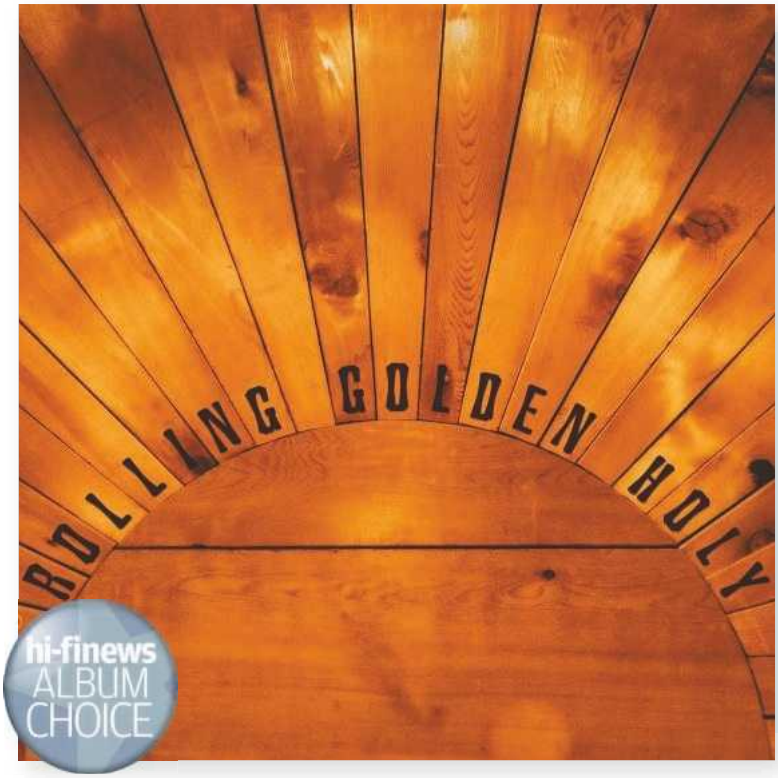

BONNY LIGHT HORSEMAN

Rolling Golden Holy

Picadilly Records 37D031CD; LP: 37D031LP

Bonny Light Horseman's Grammy-nominated 2020 debut largely consisted of reworkings of traditional songs, but here they deliver an all original set that still taps back into that wellspring – 'Someone To Weep For Me' is a doomed cavalryman's lament for the love he left behind. The band have an impressive pedigree: Anaïs Mitchell wrote the Broadway musical *Hadestown*; guitarist Joshua Kaufman has worked with The National and Taylor Swift; and Eric D Johnson has played in The Shins. Their vocal harmonies are gorgeous throughout and instrumentation ranges from spare acoustic settings augmented with occasional sax to the denser combination of fuzz guitars, keyboards and banjos on 'Cold Rain And Snow'. *MB*

Sound Quality: 90%

0 - - - - - - - - 100

THE BETHS

Expert In A Dying Field

Carpark CAK163CD; LP: CAK164LP

On their third album the Auckland quartet balance tightly played pop immediacy, which is often based on complex chord structures, with a love of velocity and the physicality of sound. 'Best Left' features a widescreen guitar-o-rama and on the single 'Silence Is Golden' they sound like The Bangles meet The Pixies with Jonathan Pearce's delightfully deranged guitar solo an unexpected bonus. Stokes is an engaging narrative lyricist. On the title track she describes the protagonists clinging onto the remnants of a relationship, while she wants to travel to comfort a lover who is 'Working in the morning, wasted in the evening' on 'Your Side'. *MB*

Sound Quality: 80%

0 - - - - - - - - 100

MOTORPSYCHO

Ancient Astronauts

Rune Grammofon MPCD106; LP: MPLP306

Most of the music here originally comes from a dance piece inspired by Stravinsky's the *Rite Of Spring* – not that many would be able to discern the influence. The Norwegian psychedelic-prog trio recorded *Ancient Astronauts* live in the studio, adding overdubs, and like their concerts it's expansive in mood, particularly on 'Chariot Of The Sun', which builds from a pretty, wordless melody etched with glockenspiel, through relentless, hypnotic riffing and restless drumming, until Hans Magnus Ryan launches into some guitar skywriting. The excitement peaks on the intense, super-tight 'The Ladder' and on 'Azrael' with its thrilling, high-velocity polyrhythms. *MB*

Sound Quality: 85%

0 - - - - - - - - 100

WILLIAM ORBIT

The Painter

Rhino 190296189265; LP: 0190296278495

Orbit made a breakthrough in 1999 with banging electronic versions of classical tunes on *Pieces In A Modern Style* but *The Painter* is a mix of seductive instrumentals and songs featuring guest vocalists: on 'Duende', Katie Melua is backed by picked guitars, chattering beats and cosmic synths. Here Orbit's production is full of colour with a typically luxurious, cool texture and melodic elements positioned three-dimensionally within the soundfield. 'Heshima Kwa Hukwe', 8m of mantric electro-funk, features Tanzanian vocalist Hukwe Zawose and on 'No Other World', Beth Orton sounds as if in a dream, her voice echoing in a sonic hall of mirrors. *MB*

Sound Quality: 90%

0 - - - - - - - - 100

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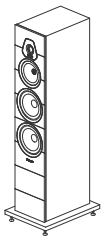
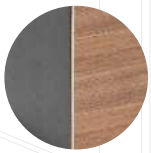
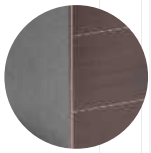
LUMINA





walnut + leather



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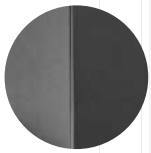

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JULIUS RODRIGUEZ

Let Sound Tell All

Verve 4531883; LP: 4525421

Once known as Orange Julius, the young piano prodigy and budding producer became famous (or notorious) for dropping out of Juilliard to tour with rapper A$AP Rocky in 2018, and his own debut album fearlessly mixes diverse ingredients. After a brash live piano opener comes Stevie Wonder's 'All I Do' sung soulfully by Mariah Cameron. On the psychedelic 'Gift Of The Moon' overdubbed trumpets by Giveton Gelin almost disappear in the heavy production, while 'Two Way Street' has frenetic and processed saxophone from the multi-talented Morgan Guerin. Rodriguez alone on piano accompanies Samara Joy on 'In Heaven': a lovely interlude. *SH*

Sound Quality: 85%

0 - - - - - - - - - 100

AVISHAI COHEN TRIO

Shifting Sands

Naïve/Believe M7594; LP: M7595

In 2020 the Israeli bassist, composer and leader had planned a special 50th-birthday, 50-nation tour. This had to be cancelled, but fortunately one special concert with the Gothenburg symphony orchestra did take place before the Covid curtain came down, as heard on last year's *Two Roses* album. And August 2021 saw him back in Gothenburg's Nilento studio recording this trio album, with long-time pianist Elchin Shirinov and new young drummer Roni Kaspi. From the tricksy, catchy nine-time opener 'Intertwined' to the rushing pulse of 'Videogame' the emphasis is on rhythms that build excitement, but there's plenty of impassioned soloing from Cohen too. *SH*

Sound Quality: 85%

0 - - - - - - - - - 100

SCOTT HAMILTON

Classics

Stunt Records STUCD 22032; LP: STULP 22021

On previous albums the supreme swing and mainstream saxophonist made Danish and Swedish ballads seem like natural vehicles for improvisation. Here with his quartet he takes on classical themes, opening with a well-known tune from Rachmaninov's Second Piano Concerto, almost unrecognisably jaunty here and sounding like some forgotten jazz standard. While 'Theme From Swan Lake' becomes just a vaguely familiar Russian folk song, Hamilton's line on Dvořák's *Humoresque* owes nothing to Art Tatum yet has an attractive lilt of its own. Hamilton's smooth sound and his graceful melodic invention always win you over. *SH*

Sound Quality: 85%

0 - - - - - - - - - 100

KENDRICK SCOTT

Corridors

Blue Note 4552187; LP: 4552189

For busy drummer and leader Kendrick Scott, forced to stay at home in 2020, the long corridors of his city apartment building became a symbol of the way that life changed for everybody in the pandemic. He wrote the suite of pieces here originally for a fellowship commission from The Jazz Gallery in New York, and he couldn't have chosen a finer interpreter than the great saxophonist Walter Smith III. Scott describes Smith's sound as 'beautiful and inspiring' and it really is. Completing an unbeatable triumvirate is the always-communicative bassist Reuben Rogers, whose resonant tones so perfectly evoke those lonely corridors on the title track. This is Scott's third Blue Note album as leader, and a must-hear. *SH*

Sound Quality: 90%

0 - - - - - - - - - 100

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LATVIAN RADIO CHOIR/SIGVARDS KLAVA

John Cage: Choral Works

Ondine C210123 (downloads to 96kHz/24-bit resolution)

Piano, yes, string quartet, cacti and cassette players – but who knew that Cage wrote for choirs? The album is a revelation: charming, mysterious, requiring no special affinity with the avant-garde or in-depth study of the composer's chance procedures. There are four pieces, 'texted' (with instructions and diagrams instead of exact notation) but without texts, even for the syllabic *Hymns and Variations*. The opening five-minute *Five* (denoting the number of parts) is simply entrancing, floating weightlessly like Ligeti's *Lux aeterna*, free from bogus mysticism. In the half-hour *Four6* I hear a still summer morning: the buzz of crickets, croak of frogs and hum of heat. Immaculate singing and engineering here. *PQ*

Sound Quality: 90%

0 - - - - - - - - 100

LPO/JUROWSKI

Stravinsky: The Firebird, The Rite of Spring, Faun and Shepherdess, Scherzo, Symphony in E flat, etc

LPO Live LPO0123 (two discs; downloads to 96kHz/24-bit resolution)

The first of three promised LPO Stravinsky volumes invites direct comparison with the LSO/Rattle album of the early Diaghilev ballets. Jurowski's ear for texture is no less acute but his *Rite* is redder in tooth and claw, especially the slow-burn brutality of Part 2. The tricky RFH acoustic is filled out by the coolly sensuous caress of Jurowski's phrasing in *The Firebird*. CD1 is better still: an indispensable collection of the pre-Paris Stravinsky, up to the rediscovered *Chant funèbre* Op 5. *The Firebird* pre-echoes of the *Scherzo Fantastique* are deliciously pointed, and the early Symphony emerges as a major work. *PQ*

Sound Quality: 85%

0 - - - - - - - - 100

B'ROCK ORCHESTRA/JACOBS

Schubert: Symphonies 8 & 9

Pentatone PTC51896894 (downloads to 192kHz/24-bit resolution)

The packaging for this 88-minute single CD (!) carefully avoids assigning numbers when the quantity of Schubert's surviving symphonies is so contested. Jacobs argues that the 'Unfinished' is to all purposes 'complete' and relates it (as do Rattle and others) to a piece of autobiographical prose, *Mein Traum*, which is recited. The jury's out – but not on the performances, which stride forward purposefully, underpinned by a gutsy walking bass. All repeats are taken in a glorious, rustically tinted account of the 'Great' C major, not the last word in precision but with its heart in the right place, culminating in a slow-burn, ultimately transcendental finale. *PQ*

Sound Quality: 85%

0 - - - - - - - - 100

BEAUTY FARM

Gombert: Motets, Volume 3

Fra Bernardo FB2231711 (two discs, downloads to 44kHz/16-bit res)

Right from the grinding harmonic gears of the opening five-part *Pater Noster*, *Beauty Farm* remind us that Gombert (1495-1560) stands alone of his kind among golden-age polyphonists. Unlike Gesualdo's addiction to graphic dissonance in his madrigals, Gombert always keeps the polyphonic wheels turning, purring onwards despite the funny noises coming from the engine. Each volume of this Dutch male-voice ensemble's pioneering project turns up remarkable premieres: this time it's the painful fragility of *Egregie Martyr*, pitched intentionally high, and the crosshatched lines of *Anima nostra sicut passer* packed close like a Dürer miniature. *PQ*

Sound Quality: 85%

0 - - - - - - - - 100

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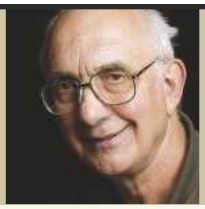

Barry Fox
Technology journalist
Barry Fox trained in electronics with the RAF and worked as a patent agent, but he gave that up to enter journalism. He is one of the world's top technology writers

Outdoor audio

Bringing a live musical event to an audience requires high-spec kit and a canny approach to on-the-fly mixing, discovers **Barry Fox**. So should you give the opening night a miss?

A modern phone, with the right apps and add-ons, such as the Sennheiser Memory Mic, has the raw power to record and mix hi-res sound, and make a feature movie. People are doing it. But the results can be a big disappointment. Unless the audio is a mixed feed from the stage mics, any recording made at a live event will be the sound of the PA speakers, not the live act.

Modern Hollywood movie musicals look and sound the way they do because much of the audio is pre-recorded and the performers mime to playback. Watch one of the early black-and-white musicals, which were shot live; the dancers sound like a herd of shouting elephants, with audio levels and quality varying as the performers move towards and away from fixed mics. The optical recorders used were hissy and hard-clipped on overload.

ABOVE: Performers on stage at the Regent's Park Open Air Theatre during a performance of *Legally Blonde*. For details of all shows coming up in 2022 see *https://openairtheatre.com*

BLONDE AMBITION

So spare a thought for the producers of modern music stage shows. We now expect to see the cast singing while dancing, or switching seamlessly between singing and dancing, not sounding out of breath or getting sloppy over diction. Some shows get it right, like *Anything Goes* at the Barbican. Others struggle.

The Regent's Park Open Air Theatre opened in 1932. It's one of the largest theatres in London, with 1240 seats, and on a sunny day is a glorious place to watch a show. It used to put on modest musical productions, like *The Boy Friend*, but has now modernised and stages big musicals. The sound system is handled by Autograph Sound, the British company which, back in the 1970s, re-invented theatre sound with radio miking and high-power systems that 'cruise' without cracking up. Founders Andrew Bruce and Phil Clifford originally worked at the Royal Opera House in Covent Garden, and you now see Autograph credited on most UK music theatre productions.

> 'The whole thing fell apart into a heavily EQ'd mess'

Outdoor audio is notoriously hard to handle. There's an infinite volume of air to move, with organic surfaces that absorb rather than reflect. But the PA industry has learned to cope. So when I went to Regent's Park for a staging of *Legally Blonde* I was surprised at how bad it often sounded.

On the one hand, the radio-miked cast and live band was loud and clean for solo songs. But when the stage filled for ensemble pieces the whole thing fell apart into a shrieking, heavily EQ'd mess, with no hope of hearing any lyrics.

How so? The installed system has large phased array speaker stacks flown high over the stage, and smaller boxes round the audience piping a slightly delayed feed. The kit is of high quality, supplied by Autograph, including speakers from Martin Audio, Meyer and D&B, powered by Amcron amps, and Sony and Sennheiser radio mic systems.

I contacted the show's Sound Designer Tony Gayle. 'Good question about the ensemble', he came back, soft-pedalling graciously on criticism of the cast. 'The answer is a combination of factors, but mainly the quality and diction of singing. The ensemble, unfortunately, concentrate more on movement than singing and along with the sound engineer over-compensating in the mix, it leads to a mushy and shrill sound.

'As the sound engineer learns to second guess what will come out of their mouths, it will be a bumpy mix!

'To be fair, the ensemble can sound good and clear but not very consistent. I'm not one of those Sound Designers who try and fix everything with software plug-ins or pre-recorded vocals. I think it degrades the 'live' feel and sound. Ultimately, as the show beds in everything will become more consistent, including the ensemble sound.'

ONLY FOOLS RUSH IN...

To keeping the sound 'live' – hear hear! But I'd paid for myself to go to the show, and I didn't fancy forking out for a second listen. So I'll just take away and pass on the more general message. Think twice before rushing to see a new musical show soon after it opens. Better perhaps to give it some time for the sound to 'bed in'.

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Barry Willis
Journalist for top American audio-video publications
While his main interest is high-end audio, Barry Willis also writes about the culinary industry, visual art and theatre for a huge variety of US newspapers and magazines

Magic wires

Barry Willis has a passive attitude towards after-market mains cables, but acknowledges that others actively adore them. There's a difference between 'different' and 'better', however

Audio is the electronics industry's only niche where magic and mysticism play significant roles. Other realms – aerospace, medicine, video, computing – have exacting standards and zero mumbo-jumbo. Meanwhile, groups such as the Video Electronics Standards Association (vesa.org), with over 300 member companies, ensure consistent performance and interoperability across a wide range of products. Black level and peak white are the same worldwide. Other electronic niches also have university-trained engineers.

HEAVEN-SENT

We have some too, counterbalanced by what is to my mind an embarrassing number of self-taught hobbyist designers who – at times – can make outlandish claims about some of the simplest products. Case in point: aftermarket power cables, promoted as offering benefits ranging from as basic as reducing sonic grunge to absolutely aspirational, launching your music-playing system into the heavenly stratosphere, and you with it, now freed from earthly tethers.

> 'We're dealing with a highly subjective experience'

Yet miracle cures need a willingness to believe. And without it, you're left wondering what you're missing that others often find so compelling. By way of explanation, here's a snippet of a recent conversation...

Me: 'I understand to a certain extent the appeal of special interconnects and speaker wires, but I absolutely don't get after-market power cords.'

Gearhead #1: 'In my experience, power cords have made a bigger difference in my systems than any interconnects or speaker cables I've tried.'

Me: 'But $10,000 for a two-metre power cord? A length of thick wire in a fancy jacket? Terminated in a god-awful IEC 15A connector with no grip strength? Surely that's insanity?'

Gearhead #2 (who bought two five-figure power cords for her subwoofers): 'They make all the difference. I know they shouldn't but they do. I can't go back to generic.'

Me: 'We've got hundreds of miles of copper wiring between power stations and our homes. How can a short length of wire from a wall socket to an amp's inlet improve that?'

Gearhead #1: 'I don't know. They work, is all I can say.'

Me: 'They're passive devices! They can't contribute anything other than acting as filters. That's all they can do.'

MORE POWER TO YOU

My gearhead pals acknowledged that in theory, this is absolutely correct, but pointed out that much is not understood about audio or about our subjective responses to music. 'Not understood' is the one-way door through which all manner of questionable beliefs and assumptions are able to sneak into the audiophile's mind.

The conversation went round-and-round quite amicably without reaching any sort of agreement. I pointed out that many audio experts, such as Siegfried Linkwitz and Mark Levinson, have made statements like this: 'A power cord of adequate size is all you need. If a component's power supply is properly designed, a power cord won't make any difference.'

If true, the fact that after-market power cords can improve the performance of audio products would seem to implicate an entire industry's failure to build and incorporate robust, low-noise power supplies. Some engineers have also mentioned that whatever noise-filtering capability can be built into a power cord can be duplicated with coils, capacitors, and resistors at the mains input. Many older products were built this way. Some still are.

ABOVE: Can replacing the standard power cords supplied with hi-fi gear improve sound?

VIVE LA DIFFERENCE

My invoking of experts didn't put a dent in my friends' beliefs, of course. I've found only two power cords that made a truly consistent improvement in multiple systems. Designed to suppress wideband noise, both were marketed for their filtering abilities – there were no extravagant claims, a rare bit of honesty in a market saturated with snake oil. Lower noise equals a quieter background, therefore better detail and micro-dynamics – clearly audible improvements.

Faith in mysticism and magic persists, probably because we're dealing with the highly subjective experience of recorded music and our unpredictable emotional responses. The one chink in my argument's armour is the fact that all electronic components, whether active or passive, have what engineers call 'a sonic signature'. In other words, every part in a system can make an audible difference. But are differences also improvements? That's a topic for another month.

Less is more.

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Jim Lesurf
Science Journalist
Jim Lesurf has spent a lifetime in audio, both as an engineer at UK hi-fi company Armstrong and reader in Physics and Electronics at St Andrew's University

Be back soon...

The disappearance of BBC Four HD from Freeview might just be the tip of the iceberg, warns **Jim Lesurf**, as the government's plans for the UHF spectrum puts the squeeze on terrestrial TV

The radio 'spectrum' is a precious natural resource. Each country around the world is responsible for allocating which parts of the spectrum can be used for which purposes within its national boundaries. Details such as radiated powers, modulation systems, *etc*, are also controlled.

However, there is a risk that transmissions from one country may interfere with those in neighbouring countries, depending on how the spectrum is used in different territories. So countries come together to agree and maximise the usefulness of the spectrum while also avoiding potential interference.

ABOVE: Tuning your TV to BBC Four HD using Freeview currently shows the message that it will be returning 'soon' (left) and (right) the Proms ended prematurely on the 8th of Sept this year

WHAT AM I BID?

Until about two decades ago the UK funded a public organisation called the Radiocommunications Agency (RA). This was tasked with carrying out technical assessments and experiments to determine the most satisfactory way to use the spectrum in the UK, which then allowed the UK government to decide what to permit. In effect, an informed choice was made, based on deciding what would give the maximum usefulness to the population of the UK.

Alas, this then changed. The UK government decided that it would be better to allow commercial companies to 'bid' for spectrum, auctioning it off to the highest bidder provided the result fitted in with international agreements. The assumption was that the companies would, themselves, decide what was 'best'. The old RA was amalgamated into what we now know as Ofcom. In reality this meant the engineering research stopped and the money-men took over.

This has had its consequences ever since. Recently, one example has been that BBC Four HD has 'gone missing' from terrestrial TV broadcasting. As I write this at the end of July we can see a message saying it will be 'back soon' or 'back shortly'. But it is currently unclear as to just how long we are expected to wait for the channel's return.

> 'Terrestrial TV might be squeezed out of existence'

SPACE INVADERS

More and more UHF spectrum has been flogged off recently to companies running mobile phone services, *etc*, and the bandspace has been taken from that which was previously allocated for television broadcasting.

This means there is no longer enough spectrum for all the pre-existing TV transmitters to operate without there being interference. The upshot is that some TV stations have to go off-air. The BBC wishes to keep BBC Four HD operating, so proposed moving this from its old (COM7) transmitters, which were being turned off, and starting it up again on another set of transmitters (PSB3).

Ideally, this was to be done overnight when COM7 ended, and viewers just had to do a 're-scan' of their receiver. But it seems that the promised space on the PSB3 transmitters wasn't cleared in time. Hence the 'back soon' message. Alas, this happened at a very unfortunate time, as it was just as the Proms started again in earnest, having bounced back from the impact of the Covid pandemic!

The BBC is also finding it harder and harder to provide its full previous service because in practical terms it is facing a squeeze on funding. So other signs of stress are showing. Indeed, technical checks on what is being broadcast via terrestrial TV may well show up reductions in information bandwidth, *etc*, which nominally preserve the 'HD' (or 'SD') image size, but have sacrificed detail to squeeze more into a smaller pot. This, of course, may also happen with audio.

QUALITY CONTROL

Unfortunately, the incentive for commercial broadcasting tends to be 'less is more' – *eg*, having a bucketload of third-rate TV stations with poor picture and sound quality. And if that lets Ofcom extract more 'tax' then we have to lump it, or use the Internet, which might not deliver as good a quality at times as the old high-rate HD via Freeview.

Terrestrial TV may well be squeezed out of existence if we, as viewers, don't make enough fuss about it to bother the government and deter Ofcom from simply following the money...

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Andrew Everard
Reviewer/writer
Andrew Everard has reviewed consumer electronics for over 30 years and is still effortlessly enthusiastic about new developments, discovering new kit – and music

Power cuts

With all the talk of spiralling energy bills and environmental impact, should we be rethinking the way we buy – and use – our hi-fi systems? **Andrew Everard** finds himself torn

Writing this in the long, hot summer of '22 – as it may not be known in the future if the climate change predictions are proved accurate – has led me to do some long, hard thinking about my hi-fi system, and the energy it uses.

Until recently, my reasoning has been in sync with those who run cars with big V8 engines, in that if you can afford to buy it, then presumably you can factor in the cost of the fuel required to run it. Or limit its use to that of a weekend car, with something more sensible – or a bike or the bus – for the daily commute.

I well remember my shock some years back when driving a luxury car to review its audio system, and I saw the miles per gallon read-out plummet to single figures under acceleration. There went all my 'I quite fancy one of these' dreams, and that thought came back to me when I recently filled up my own car from almost empty and saw the pump clocking unstoppably to the better part of £130.

COUNTING THE COST

Okay: the answer is to go energy-efficient and electric. Or is it? Yes, it's a zero-emissions option – at least in use, provided you rule out the carbon footprint of the manufacturing, the disposal of exhausted batteries, and the generation of the electricity to recharge them. But how much is it going to cost to recharge the vehicle as the price of energy keeps rising, even before someone in authority notices the reduced tax and duty take as our purchases of petrol and diesel declines, and seeks to find a way to recoup some of that loss?

So, there are two arguments against energy consumption – all energy consumption. The responsible, grown-up one considers the impact on the environment, but I can't be alone in thinking that more prosaic reasons will have a greater effect on us. Just as fuel purchases plummeted when we were all in lockdown a year or two back, so now the same is likely to happen just because it's all become so darned expensive, with or without any centralised efforts taken to ease the burden on us.

ABOVE: Powerful amplifiers need not be inefficient, as NAD's 200W M33 demonstrates

THE BURNING QUESTION

Where does that leave our hi-fi systems? Yes, they may be very efficient when it comes to turning electricity into entertainment, but in terms of 'power in, power out' they tend to be a lot less credible. As Mark Craven recently noted [*HFN* Aug '22], some amps are horrendously inefficient when it comes to sucking juice out of the wall and turning it into the movement of speaker cones.

> 'Some hi-fi systems are horrendously inefficient'

Not that amplifiers are alone in this: figures available online suggest that some 70% of the energy used in a car engine is wasted as heat, and as MC pointed out it can seem like some valve and Class A amplifiers could well be nearing this figure, given their effectiveness at heating up the room. Not for the first time, I recently had to suspend an amplifier listening session simply because the space was becoming too warm for comfort after only a few hours.

Regular readers will know that *Hi-Fi News* has been testing and publishing power consumption figures for at least 15 years, including at standby, idle (when an amp is on but not playing) and at its rated power output. Now, that same amp that warmed the room was gobbling 300W whether playing music or not – so if you want to keep the power but cut your bills, the obvious answer is to go for an amplifier with cooler-running, more energy-efficient Class D output stages, such as the EISA Award-winning NAD M33. Equipped with Purifi Eigentakt modules, the M33 idles at just 32W and consumes 446W when delivering its rated 2x200W/8ohm output – that's ~90% efficient.

HI-FI FOR SPECIAL OCCASIONS

So, there's that 'if you can afford to buy it, you can afford to run it' argument again, but having had my jaw drop at my latest electricity statement – I never knew a two-bedroom house could use that much juice in a three-month period! – I'm becoming more sensitive to the cost, in every sense, of keeping my system running. Maybe, as a colleague suggested, the solution is to go for speakers of greater sensitivity, used with smaller, more energy-efficient amplification. Or maybe my main system will become that 'V8 in the garage', only rolled out for high days and holidays…

Clearly, limitless.

"It's almost as if the streamer is stripping away everything that isn't music and presenting the DAC with the signal alone with precise yet fluent form that sounds so right it's uncanny."

Jason Kennedy | **HiFi+**

"The new Core module is not only a must for those who wish to obtain the absolute best sound quality—but also for those who desire zero-config, true Plug & Play functionality."

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Steve Harris
Contributor
Steve Harris edited *Hi-Fi News* between 1986 and 2005. He loves jazz, blues music, vinyl and vintage hi-fi and anything that makes good music come to life

Copyright wrongs

In the 1980s the music industry took double-cassette deck manufacturers to court – now it's facing the far greater challenge of keeping a grip on streamed media, says **Steve Harris**

Not long ago, irrespective of copyright, you could download anything from YouTube, even whole albums and full movies. But it was a fool's paradise, of course. YouTube's terms and conditions prohibit downloading except when a download option is offered by YouTube itself. If you join YouTube Premium, your downloads within the app remain accessible only as long as you subscribe. Yet there've long been plenty of third-party operators explicitly offering 'free YouTube downloads'. The music industry has taken legal action against many of these.

RIGHT: 'Magic!' – football star Terry Venables endorses Amstrad's 7090 portable double-cassette machine, which sold for £99. TV ads from the company for a system with 'hi-speed dubbing' would prove too much for the BPI

THE TALE OF THE TAPE

PRS for Music, which looks after UK artists' rights and administers recording rights via the MCPS (Mechanical Copyright Protection Society), reported in 2020 that usage of stream-ripping sites had mushroomed by 1390% since 2016, 'overshadowing all other illegal music activity in the UK'. In early 2021, the High Court granted injunctions that obliged the UK's main Internet service providers to block a number of stream-ripping and cyberlocker sites. Meanwhile YouTube has itself been clamping down; even the long-established Free Download Manager website stopped YouTube downloads in October 2021 after a complaint from YouTube's parent Google.

Back in the simpler time of the late '70s, pre-recorded cassettes were booming, but sales of blank cassettes were booming more. The record industry was in no doubt that most of those blanks were being used to make illegal copies of commercial records or tapes.

Then came twin cassette decks that made this easy to do. Amstrad advertised its 7090 double-cassette boombox portable under the simple headline 'It tapes tapes'. Only in small print at the bottom came a warning: 'The recording and playback of certain material may only be possible by permission. Please refer to the Copyright Act 1956, the Performers Protection Acts 1958-1972'.

In 1988, a legal battle remembered now as the 'Amstrad case' finally yielded a ruling on whether the manufacturer of the recorder could be held liable for the user's infringement. You can find the whole story (as I did) in Lord Templeman's summing-up at *www.casemine.com*.

> 'These battles over home taping now seem trivial'

It started in 1984, when Amstrad launched tower systems that included twin double-speed cassette decks. This was really too much for the BPI, the body which then – as now – represented the record labels. When the Amstrad system with 'hi-speed dubbing' was advertised on TV, the BPI wrote to Amstrad through lawyers and complained that Amstrad was 'inciting' the copying of copyrighted material, and that the ad was an 'encouragement to break the law'.

Amstrad sought a court declaration that by advertising and offering their models for sale they were not acting unlawfully, but the judge declined. The record companies responded with a writ of their own seeking to restrain Amstrad from offering or advertising its 'hi-speed' dubbing models, and asking for redress for copyright infringements.

COURTING CONTROVERSY

After a final appeal, the House of Lords found in favour of Amstrad (and retailer Dixons). Lord Templeman commented that 'Amstrad's advertisement was deplorable', but concluded that, even though a user could choose to infringe copyright by using an Amstrad machine, Amstrad did not then become a joint infringer of the copyright.

The same year, 1988, brought the new Copyright Designs and Patents Act, but this didn't really change the situation. The success of CD was bringing record companies back to prosperity, but they were more concerned than ever about piracy. Then came the online music revolution, in which they lost their traditional control over the way music was distributed and consumed.

These battles over home taping 35 years ago now seem like trivial skirmishes compared with the global turmoil of online copyright today.

Sound Off!

Send in your views to:
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AMP FOR BUDGET SET-UP

BEST MATCH FOR MY THORENS AND JBL PICKS?

I buy *HFN* to keep up with the latest developments in audio technology – the magazine has 'news' in its name, after all – and am pleased your regular coverage of hi-fi shows has now returned as I enjoy seeing and reading about all the latest launches. However, it is often your 'Budget Esoterica' reviews that I turn to first as I have been considering putting together a modestly priced vinyl-based system for the past 18 months.

So far I am pretty set on the JBL 4309 speakers reviewed in the January issue. I like their styling and, according to both Andrew Everard's review and Paul Miller's Lab Report, they are easy to drive. No, these weren't actually a 'Budget Esoterica' product, but at £1799 they are within my budget.

The 'Budget Esoterica' product that was actually featured in the January issue was the Thorens TD 202 turntable at £599, including cartridge and arm. This is my chosen deck. So my question is: which amplifier would best slot in between the JBL 4309s and TD 202? I can spend up to £2000.

Kris Boyce, via email

ABOVE: JBL rates the 4309's sensitivity at 87dB, as confirmed in our Lab Report

Andrew Everard replies: Given the JBL 4309's moderate sensitivity, you have a reasonably wide choice of amplifiers available within your budget, and I'm not sure you need to spend anything like £2000 to get the amp you need. The likes of the Rega Elex-R would be worth investigating – and being a Rega it has a high-quality phono stage built-in – while the same company's Aria Mk3 offers a more compact solution, should that be important to you.

But you could spend even less. For example, the Marantz PM8006 [*HFN* Sep '18] is a well-equipped integrated amplifier with an excellent phono stage onboard, while the compact Cyrus One, a reinvention of the classic entry-level amp from the company, shouldn't be overlooked either.

ABOVE: The Thorens TD 202 with TP 71 arm and Audio-Technica AT-95E pick-up

Time to listen

ENJOYING MUSIC WHILE USING A HEARING AID

I am maturing in age and suffering with hearing loss, possibly as a result of listening to music for many years. I have used good-quality hearing aids and they do address high-frequency roll off to a degree. Unfortunately, they also affect the entire presentation when listening to music, in tone and other aspects, so obviously there is much manipulation of the signal taking place.

I have tried various models and they all suffer to some degree as they all concentrate on rendering speech clearly rather than doing justice to music. I am surprised your magazine has never investigated this issue and think it's about time. I would welcome some advice.

Eric Mawson, via email

Barry Willis replies: Hearing loss is common as we age, with many causes. Music probably isn't one of them, unless you're a career rocker or an orchestral performer seated in front of the brass instruments. Look into high-performance hearing aids with user-programmable filters for various purposes. Another solution might be a pro-quality multi-band parametric equaliser to let you trim your system's output to match your hearing profile. We have looked at hearing aids in the past [*HFN* Mar '14], how our hearing functions [*HFN* Jan '08], and hearing loss [*HFN* Apr '18].

WhitWorld

OUR HI-FI WORLD THROUGH THE EYES OF WHITWORTH

"GOOD NEWS - I'VE SENT ALL THOSE OLD CDS TO THE CHARITY SHOP."

Remasters of reality

JAZZ CDS AND MO-FI REISSUES AS READER DETAILS DISCOGS DISCOVERIES

Many thanks to Steve Harris for his comments on my letter in the June Sound Off pages in which I talked about the 'minefield of mastering' recordings. I have since purchased the *Legendary Sidney Bechet* CD [ND86590] from Discogs and agree fully with Steve when he describes it as sounding 'slightly lifeless'. In fact, it sounds as if it has been filtered in some way to within an inch of its life.

The only LP I have of Bechet is of him playing with the Bechet Spanier Big Four on the Swaggie label. It sounds wonderful, partly because it was re-mastered by John R T Davies whose mantra was said to be 'add nothing, take nothing away'. A very good friend of mine, Martin Colvill, has just passed away. Martin was a founder of Lotus racing car specialists Bell & Colvill but was also a lifelong jazz aficionado, leaving behind a racked warehouse full of recorded music and a very large collection of 78s. Martin was always trying to get me to appreciate the 78s, but without much success, I'm afraid.

It is a shame someone like Ray Dolby, following his success at Ampex, did not continue to discover a better way of storing analogue sound. It seems that the future will be digital, with music being produced by machines, as is the case with the multi-instrumentalist Jacob Collier.

I also read Ken Kessler's review of Mobile Fidelity's One-Step release of Carole King's *Tapestry* [UD1S 2-030] in the September issue and

ABOVE: The MoFi reissue of Carole King's *Tapestry* on two One-Step 45rpm LPs

ABOVE: Vinyl reissue of Bechet with the Spanier Big Four on Swaggie [S1392]

then listened to it on Tidal. My wife started singing away, so I decided to follow Ken's recommendation and buy a copy. After scouring the Discogs marketplace I finally ordered one from a seller in Germany, which I am waiting to arrive, albeit at a price rather higher than I had anticipated!

Keith Guerrier, via email

Steve Harris replies: Those wonderful 1940 Bechet-Spanier Big Four numbers have been reissued on many, many LPs, some good, some atrocious. I have two on the Ember label, for example. The first, from 1965 in a basic mainly-white cover, is acceptable, but the 1973 edition comes in a more colourful cover and has a ludicrous amount of added reverb. Stick to Swaggie, I'd say! As for CD, Mosaic Records' definitive *The Complete HRS Sessions* 6CD box contains the Bechet-Spanier tracks (including the alternate takes), along with sessions recorded by Pee Wee Russell, Jack Teagarden and others. But a great alternative is *Sidney Bechet: The Essential Collection* from Avid Group, painstakingly remastered from the 78s by Dave Bennett.

Ken Kessler replies: Despite the current fracas about MoFi using DSD at one stage in the production chain – remember, it was the late Tim De Paravicini who set up the One-Step programme with MoFi, and he was good enough for Abbey Road Studios – the sound of *Tapestry* is exceptional. Alas, like everything else, prices are escalating, but I'm sure you'll find that it's worth every pound.

JITTERBUG
USB Filter

Can a £39 insect make all your CD files sound better than Hi-Res?

Yes and no: Using the same equipment and a quality DAC, a 24/96 file (for example) will always sound better than a CD 16/44.1 file … but, even a single JitterBug will often allow a CD file to be more musical and more emotionally stimulating than a Hi-Res file without the benefit of a JitterBug.

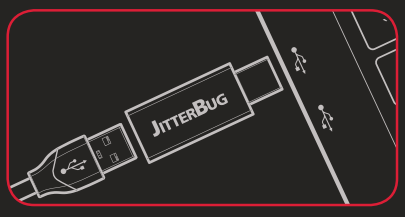
Noise is the problem. Real noise—the kind you can't hear directly. Most often, the word "noise" is used to describe tape hiss or a scratch on a record, but these sounds aren't noise; they are properly reproduced sounds that we wish weren't there.

Problem noise is essentially random, resonant or parasitic energy, which has no meaning. It can't be turned into discrete sounds, but it does compromise signal integrity and the performance of everything it touches.

JitterBug's dual-function line-conditioning circuitry greatly reduces the noise and ringing that plague *both* the data and power lines of USB ports, whether on a computer, streamer, home stereo or car audio front-panel USB input.

A single JitterBug is used in between devices (i.e., in series) as shown below. For an **additional "wow" experience,** try a second JitterBug into another USB port on the same device (such as a computer). Whether the second port is vacant, or is feeding a printer or charging a phone, JitterBug's noise-reduction ability is likely to surprise you. No, the printer won't be affected—only the audio!

While a JitterBug helps MP3s sound a lot more like music, high-sample-rate files have the most noise vulnerability. Try a JitterBug or two on all your equipment, but never more than two per USB bus. There is such a thing as too much of a good thing.



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Hitting the low notes

HOW DO ROOM DIMENSIONS RELATE TO THE REPRODUCTION OF BASS FREQUENCIES?

I am fortunate in that all our children have now grown up and left home with the result that I have been allowed to convert the dining room of my house into a listening room. This measures 5x4m and my first task was to try and adjust my REL S/5 SHO subwoofer so that it would integrate with my Sonus faber Amati Tradition loudspeakers [*HFN* Oct '17]. I had assumed I wouldn't be able to hear anything below a 5m wavelength, which on my very basic calculation showed a frequency of 68Hz.

At first I was disappointed by this, and wondered whether there was any point in having a subwoofer in my system at all. Yet using the *Hi-Fi News Test Disc II* [HFN 015], I could hear, or thought I could hear, sounds down to around 25Hz. It would be really helpful to have an explanation of how room dimensions relate to the reproduction of low frequencies.

Martin Phillips, via email

ABOVE: The REL S/5 SHO features a 12in woofer and 550W of Class D amplification

Paul Miller & Mark Craven reply: You are certainly able to hear bass sounds down to 25Hz from your REL S/5 SHO subwoofer but this doesn't mean you are experiencing a 'flat response' all the way down to these rib-tickling frequencies. In practice the size of the room has more impact on the modal resonances that are audible than the ultimate extension that might be realised.

Listening space *dimensions* will typically dictate the ideal placement of a subwoofer (more so than with many speakers) because at these very low frequencies your walls, floor and ceiling all act as 'acoustic mirrors', boosting the bass output. There's no free lunch, of course, so the benefit of this boundary gain must be traded against discernible bass peaks and nulls. For a room like yours (measuring 5x4x3m) the so-called Schroeder frequency – below which individual room modes are subjectively *more* obvious – will be about 180Hz.

Now you have this liberated listening space, you can experiment with the ideal location for your sub. Start by placing it tight into a front corner and then move it progressively down a side wall towards your listening position. This should be easy enough because, while your REL S/5 SHO is a superb performer, it's neither as heavy nor bulky as some rivals and features carry handles on the sides of the cabinet. Listen to your favourite bass-heavy albums, rather than sweeps or random noise, while you tweak the position of both sub and Amatis to achieve a 'blended' bass.

ABOVE: The Amati Tradition hosts a 28mm tweeter, 150mm mid and 220mm woofers

Four years ago, AudioQuest shook the hi-fi world with our first DragonFly DAC–Preamp–Headphone Amp—the rare audio product that brought more compelling sound to *all* music lovers, playing high-res files to MP3s on perfectionist systems and modest laptops.

Now, the new DragonFly Black and DragonFly Red exceed their predecessor in every way, delivering more beautiful music, boasting software upgradability, and providing compatibility with **Android** and **Apple iOS** mobile devices.

While **Black** offers more clarity, depth and category-defining value than ever before, the take-no-prisoners **Red** provides even more finesse, resolution, torque and more than enough power to drive even the most demanding headphones.

The word is out: DigitalAudioReview.net's John Darko calls DragonFly Red and Black "the finest examples of everyman hifi to ever grace these pages. Their value quotients explode the dial."

Let the joyful experience begin!

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Seeking a deck to impress

WHAT'S THE SOLUTION WHEN A TURNTABLE'S STYLE IS JUST AS IMPORTANT AS ITS SOUND? READ ON...

Though I am using my Aurender A10 music server with built-in DAC to listen to 90% of my music these days, I still have an extensive vinyl collection of mostly '70s and '80s rock records and now want to buy a decent deck on which to play them. I've been looking at turntables in the sub-£4k range, but the choice is bewildering.

Still, I've eliminated models from Pro-Ject, Technics, Rega and Thorens – not on grounds of sound quality but because of the way they look. Purists may well pour scorn, but the turntable will sit in a prominent spot in my living room and both myself and my partner are something of interior design fanatics.

One deck that has caught my eye is the VPI Prime 21+ [*HFN* Mar '21], but I'm also considering the Clearaudio Concept [*HFN* Jul '10] in a dark wood finish with an aluminium Satisfy tonearm. Then there's the Oracle Paris MkV [*HFN* Sep '11] in red with a Pro-Ject 9cc arm, and Acoustic Solid's Wood MPX [*HFN* Jan '13] with an OEM Rega RB300 arm.

Are there any models I've missed on my list, and if I were to buy a turntable that did not come with an arm, which arms would you recommend in the sub-£2k range? I already have a Koetsu Black cartridge in storage as well as a Van den Hul MC-10 Special, so will not be spending money on a new pick-up.

As for the rest of my system, this comprises a McIntosh C2700 preamp with phono stage, McIntosh MC275 MkVI power amp [*HFN* Feb '13] and a pair of Spendor's D9.2 speakers, which I find to be highly detailed.

Enkil Long, via email

ABOVE: Van den Hul's MC-10 Special has a boron cantilever with vdH-type 1 stylus

Adam Smith replies: With your available budget, cartridges of the calibre of the Koetsu Black and Van den Hul MC-10 Special, plus the excellent phono stage built into your McIntosh preamp, you have all the ingredients for a big step towards vinyl nirvana, and one that will surely grace your living space at the same time!

Your initial list is an excellent start and all the models on it are highly capable. However, the one that leaps out at me is the VPI Prime 21+. It was the first VPI turntable I ever reviewed and I was hugely impressed by its performance. I would happily endorse it wholeheartedly. In addition, as you're already a McIntosh owner, don't overlook the company's own MT2 Precision Turntable at £5995, which as of June this year ships with a Sumiko Moonstone MM cartridge.

Designed and manufactured in partnership with Clearaudio, the MT2 is a fine performer that will be more than capable of extracting the best from your two MC cartridges. What's more, when in use, a green light emanates from beneath the deck's platter as well as the edges of its plinth. Not only will this complement the glow from behind the McIntosh logo on the front of your C2700 preamp, it will ensure the deck is the centrepiece of your system.

That said, I would feel remiss in not pointing out that the £4500 cost of the VPI Prime 21+ would also buy you one of my all-time favourite turntables in the form of the Michell Orbe, which comes in at £4185 for the SE version. Add a Rega RB3000 tonearm for £1400 or, if you can stretch to it, the recently reintroduced SME M2-9 tonearm at £2380 and you will have a formidable vinyl front-end that will not only draw admiring glances but be more than capable of extracting the best from your '70s and '80s rock albums – and more besides.

ABOVE: The VPI Prime 21+ turntable comes with a 10.5in arm, custom (A-T built) Shyla MC pick-up and a Nordost/Weisline RCA tonearm cable

Honeymoon for CD

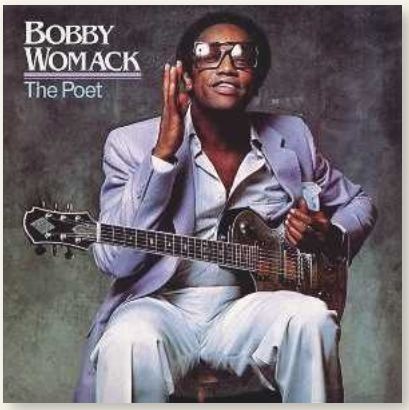
MODERN DACS AND WHY A WEDDING DJ HOPES THE SILVER DISC HAS A FUTURE

Letters from readers in the May and July Sound Off pages praising CD over vinyl have prompted my perhaps unusual reply, explaining my angle on the subject. As a full-time professional mobile wedding DJ of many years standing I am in a rapidly diminishing pool of entertainers who still use the format. In fact, I switched from vinyl to CD as soon as the latter surfaced and continue to only use CD to this day. By and large my fellow DJs are now laptop users, with the result that CDs from specialist suppliers are drying up, to be replaced by downloads.

Nevertheless, what I found in the two years of lockdown was that some amazing CDs became available, and which in a number of instances feature tracks never released previously in any format! The amount I have discovered for my own, and my clients' pleasure, now number in their dozens, including an expanded version of Freda Payne's *Contact* as a Japanese import, *Invictus' Greatest Hits* featuring various artists, and reissues of Bobby Womack's *The Poet* and *Poet II*, both remastered.

Comments from recent revellers have included 'It's rare to hear such clear and pristine sound outside a home hi-fi environment' and 'Wow, that sounds good!'. Fingers crossed that suppliers and manufacturers of CDs will to continue to offer their imaginative pressings into the future. By the way, I have just subscribed to *Hi-Fi News* for six months. It's an excellent magazine!

Stuart Hanna, via email



ABOVE: Remastered and reissued in 2021 on ABKO – Bobby Womack's *The Poet*

I could not agree more with those readers who have expressed their support for CD in the Sound Off pages over recent months, all of which stem from Barry Willis's Opinion piece 'The badly maligned CD' [*HFN* Feb '22]. For me, the beginning of CD audio was exciting and welcome. Sure, it had some rough edges at first, but with modern DACs, improved analogue output stages and better CD recordings, the format now sounds excellent. Whatever source makes you happy, but for me I will stay with CD as long as it remains a viable option. Thankfully, it is still very much alive, even if sales have diminished.

My first CD player was a Yamaha 'Natural Sound' CD-300 while one of my first CDs was Elton John's *Honky Chateau*. Played through a pair of B&W DM14 speakers it sounded alive, clear and like the future!

John Ellnet, via email

Barry Willis replies: It's gratifying to know I'm not alone in the hi-fi wilderness in my enthusiasm for CD. A couple of years ago I had a visit from Nashville musician, producer and recording engineer Rick Clark (*www.rickclarkproductions.com*). Admiring my walls of CDs, he said, 'I'm so glad to see you have CDs. I think it's the best format we will ever have'.

ABOVE: Period ad shows the B&W DM14, a closed-box standmount launched in 1981

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hi-fi news OUTSTANDING PRODUCT

"The look is 100% correct, and the sound is better than I recall of the original"

Ken Kessler - hi-fi news

This provides powerful torque, allows precise speed control, and keeps unwanted vibrations from the drive away from the platter. A brand new tonearm, the TP 124 can be precisely adjusted in all parameters to the cartridge of choice and features an innovative anti-skating solution with a ruby bearing and a patented electric tonearm lift to facilitate gentle placement and removal of the stylus. Thorens has payed attention to every detail when developing the new TD 124 DD to ensure that it meets your highest aspirations in sound performance.

TD124/SPU 124 £8000/£2000

TD1600/1601 £2,800/£3,300

hi-fi news OUTSTANDING PRODUCT

Thorens new TD 1601 combines all the benefits of the TD1600 and an electric tonearm lift and a contactless auto shut off.

Special features include:

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- Two part platter
- Adjustable belt tension
- Electrical controlled motor
- Electrical lift
- Contactless shut off
- Balanced (XLR) and unbalanced (RCA) output
- Thorens precision tonearm TP 92 (9")

TD201 £550

TD101A £575

TD202 £675

TD102A £765

TD402DD £925

TD403DD £1,450

TD1500 £1,999

- Stable and super silent direct drive
- THORENS TP 150 tonearm
- Detachable SME Headshell
- Massive 1.4 kg and 22mm-thick Die-cast aluminum platter
- Pre installed cartridge Ortofon 2 M Blue

"The build, looks and price are irresistible, but its the sound quality that will delight this seeking an amalgam of vintage and modern. The TD1500 nails it!"

Ken Kessler - hi-finews

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Technics SL-XP5

Believing portables to be as good as their full-sized rivals, many music lovers sought out the smallest – and this CD player was a compact king. How does it sound today?
Review: **Tim Jarman** Lab: **Paul Miller**

Think about portable CD players and the chances are that the Sony Discman [*HFN* Jul '19] will come to mind. The company's ability to produce enchanting and compelling miniature versions of existing products has been pretty much unequalled, and 'the world's smallest' is a phrase that can often be seen in Sony's vintage catalogues. In comparison, the company's larger models were frequently bland and derivative.

On the other hand, Matsushita's Technics division excelled at the bigger scale. Plus-sized designs such as the SP-10 turntable in its massive obsidian plinth, the SL-P1200 CD player [*HFN* Aug '13], SU-A2/SE-A1 pre/power amp combo and SB-7000 loudspeaker [*HFN* Jan '21] all drip with desirability – even if they are all far from easy to find a place for in the home.

ABOVE: By 1987 the design of portable CD players had improved to the point where they were little bigger than the discs they played. The SL-XP5 is even smaller in plan than a CD jewel case

RAY OF LIGHT

Miniature Technics products are less common, partly because parent company Matsushita marketed most of them under the Panasonic brand. There were some exceptions, though, in particular a line of portable CD players that began in 1985 with the SL-XP7. It looks bulky now, but the SL-XP7 was the smallest CD player then available, being much more compact than Sony's D-50 [*HFN* Jan '13] and the Philips/Marantz CD10 [*HFN* Mar '21].

In a market that appreciated newness and novelty, it was perhaps odd that Technics chose to hardly change the appearance of the SL-XP7 when its replacement arrived in the latter part of 1987. Even when viewed side by side, the only obvious difference between the original model and the new SL-XP5, as reviewed here, was a slight reduction in the player's height.

Little was added or taken away when it came to facilities either, the only new feature being a battery-condition indicator that replaced the original 'low' warning. When fitted with case and batteries even the weight remained much the same at a little over a kilogram. This, then, was progress, although a lot of work had been done inside. The price had fallen too, from around £300 to just under £230.

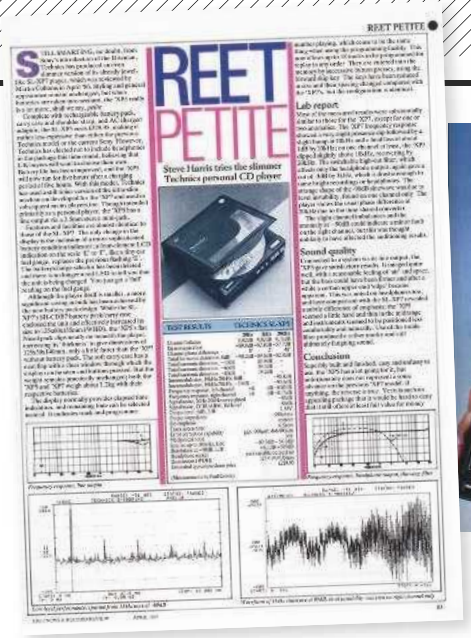
> 'The clip-in battery pack enabled it to be so small'

The SL-XP5 may have been small, but it was packed with useful features and advanced technology. This started with the laser, which used the same 'FF-1' (Fine Focus, single beam) optics as the types found in the top full-sized models, such as the SL-P1200. Single-beam pick-ups were usually the preserve of Philips, the other big Japanese manufacturers preferring to use the simpler three-beam technique pioneered by Sony.

Limited space and the need for battery economy mandated the use of a single time-shared DAC in the SL-XP5, but the drawbacks of this were mitigated in part by a 2x oversampling digital filter [see PM's Lab Report, p125]. This simplified the design of the player's analogue stages and reduced the phase error between the channels at the highest frequencies from 90° to 45° – not ideal but an improvement. The DAC was the Burr-Brown PCM55, housed in a miniature surface-mount package. All contributed to the SL-XP5's audio performance, but it was another technical refinement, carried over from the SL-XP7, that enabled it to be so small.

SPECIAL OPERATIONS

Although invariably plastered with the word 'Digital', all early CD players contained a great deal of analogue circuitry, especially in the servo sections which position and focus the laser and govern the speed at which the disc rotates. To obtain the required precision, these circuits are usually built around operational amplifiers (op-amps) – small, accurate gain blocks that are able to perform many functions in analogue electronics.


REET PETITE

Steve Harris tries the slimmer Technics personal CD player

Lab report

Sound quality

Conclusion

LEFT: 'An appealing package' is the verdict on the SL-XP5 in this early review from *HFN* Apr '87 (far left) and (right) the player is held up to show its scale in this contemporary brochure shot

To work at their best, op-amps require split symmetrical power supplies, one positive and one negative. Both the Sony D-50 and the Philips/Marantz CD10 obtained these from an internal DC-DC converter that turned the DC battery voltage into AC, passed it through a transformer and then returned it to DC of the correct level and polarity. These converters worked well, but they were bulky and required thorough screening to prevent radiated noise affecting the operation of the other parts of the player. What's more, these components added noticeably to the overall size of the unit.

CELL DIVISION

Technics decided to dispense with DC-DC converters in its early designs and instead used a split dual-battery pack whose two banks of cells produced ±6V. This was at a time when specialised rechargeable packs were the norm for CD portables.

In its original form for the SL-XP7, the batteries were part of a case into which the player was mounted for portable use. Known as the SH-CDB7, this added considerably to the overall size of the player. For the SL-XP5 the design was improved and the battery simply clipped onto the base of the machine, increasing its depth from 25 to 39mm. When new, the battery would give a playing time of up to five hours, about the same as the time it took to charge it up again. Charging was performed with the pack *in situ*, using the supplied AC adapter (which could also run the player battery-free for home use). As this provided a dual symmetrical output it came with a specially designed three-pin connector.

Technics priced the SL-XP5 aggressively, undercutting the equivalent model from Sony. The full outfit included a basic wired remote control, a battery, a carry case and a strap (which sensibly attached to the battery and not the player, since it was not required for static use) but no headphones. This was probably a wise move as anyone buying at this level would have probably discarded them in favour of the default pair of Sennheiser HD40s, which everyone with nice personal players seemed to have at the time.

RIGHT: The Technics SL-XP5 uses the same single-beam 'FF-1' optics as the types found in the company's top full-sized CD players

Unlike some of the earlier portables, the SL-XP5 still seems small today. Without the battery pack it is absolutely tiny, being only as deep as a CD in its case and notably less wide. There have been smaller portables made since, of course, but none has quite the incredible feeling of solidity of the SL-XP5. It's almost as if it is cut from stone, so dense and solid is it in the hand. The standard of finish is immaculate too – they really don't make 'em like they used to.

SHOCK ROCK

Of course, the keys and the display are very small too, but the play, stop, skip and open buttons are just large enough to be used without too much fuss. What does date the machine is the separate on/off switch at the side. This was necessary to prevent the battery from running down when the player was not being used, though in later models improved logic techniques allowed this function to be integrated with those for both play and stop.

Another inclusion that is curious is a treble filter that acts only on the headphone output. Its cut off is rather abrupt and makes the bright, shiny sound of CD more like that of a worn out cassette. Luckily there is also a line level output at the rear of the player that bypasses both this filter and the volume control.

The lack of a working battery prevented me from trying the SL-XP5 on the move, but some limited tests at home showed that shock resistance is pretty negligible – the design pre-dates the introduction of anti-skip memories by several years. As a home player it does well though, the styling being very similar to that of the company's SL-7 turntable (note the curved bulge in the lid at the front). The audio ⇨

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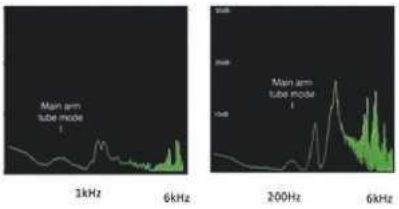

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press at the time tended to argue that since the performance of all CD players was very good, one might as well plump for a portable since it was more flexible in the way it could be used. Those who like hulking great battleship players may disagree, but with models like the SL-XP5 one can see the virtue of the argument.

TIM LISTENS

I am always impressed by the quality of sound a good CD portable can give when connected to a full-sized amplifier and loudspeakers. Via its line output, the SL-XP5 sounds impressive, despite being tiny. Like the company's SL-P3 [*HFN* Sep '22] there are mitigating factors that improve the performance of the single DAC system to the point where reasonably convincing stereo images can be created. It's not perfect in this respect, but is good enough for all but the most critical applications.

The tonal balance is similar to that of the SL-P3 too, being dry at the bottom end and slightly brittle in the midband. This was typical of Japanese players of this era (the Aiwa DX-1500 being a notable exception) and is a presentation that divides opinion. Personally I enjoy the treble focus and insight this brings. The SL-XP5's sound is also a little raw, possibly due to the lack of space inside the player to accommodate complex analogue filtering. I approve of this too, believing obsessive response shaping has wrung much of the life out of many a full-sized top-end Japanese player.

Another pleasing aspect of the design of the SL-XP5 is that the line output level is close to the 2V standard of a normal CD player, so the volume control of the amplifier works correctly when the portable is used as part of a hi-fi system.

ABOVE: A neat (if tiny) set of controls [top] while on the side of the player [bottom] is a headphone socket with a filter switch, though this robs the output of much of its 'sparkle'

Joan Armatrading's 'Show Some Emotion' [*Track Record;* A&M CDA 63725] demonstrated the broad and continuous soundstage the SL-XP5 can project. Centre vocal presence wasn't as pin-sharp as when heard through some players, but the percussion still bounced off my listening room walls, well beyond the boundary of the outer edges of the speakers. I was quite taken by the sweetness of the sound around the vocals too. The presentation isn't as smooth as the best, but auditioned in isolation it is difficult to fault.

TOTALLY IN TUNE

A similarly broad soundstage was also noted when listening to Vivaldi's *Concerto Grosso* Op 3 No 8 [Deutsche Grammophon 419 855-2], although some concentration was required to perceive any real sense of depth. Encountered briefly, the SL-XP5's sound is two dimensional when playing this recording, but the information is to be found once one has 'tuned in'. What was impressive was the clear rendering of the harpsichord in the allegro, which is easily lost behind the vigorously swirling strings when using equipment of a lower calibre.

To hear a concert reproduced with such power and detail from this tiny, jewel-like box is still incredible, even 35 years after it was introduced. The battery and the player's poor resistance to shock make it hopeless as a portable, but this fine little machine has a lot to recommend it as a way of discretely adding a Compact Disc ⇨

LEFT: Lid-up shot reveals that the SL-XP5 is so small that a CD, once placed on the disc holder, nearly touches the player's sides. Meanwhile, build and finish are immaculate throughout

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ABOVE: With the bottom section of the player's casing removed, all the working parts are revealed – in miniature. The absence of a DC-DC converter saved a lot of space, but the designers still managed to pack a 2x oversampling digital filter inside

player to a vintage system that possibly pre-dates the CD format.

BUYING SECONDHAND

There are a reasonable number of SL-XP5s still in circulation and at present they aren't as expensive as an SL-XP7, which have become very pricey of late. When buying, the first thing to check is that corrosion has not spread from the batteries and ruined the insides of the player if the unit has been stored for a long period with battery pack attached.

A weak point is the hinge in the rear lefthand corner, which acts against a strong spring that pops the lid open a little when the open key is pressed. The force of this can cause the plastic to split around the pivot, making the lid difficult to close.

ABOVE: Original user manual identifies the key controls, buttons and inputs

It's also crucial to ensure that the power unit is present because modern alternatives are not available. Even the connector is unique, so you can't even make something up if the original is missing. The model number of the UK power unit is SH-CDA5.

Putting these issues aside, the players are long lived, durable machines. Portables traditionally see less use than full-sized models so worn out motors and lasers are less common. Faults of a mechanical nature are normally the result of sand or grit (from the beach perhaps?) getting into the works and becoming stuck to the grease on the sliding parts of the mechanism. If this is the case then repairs require sharp eyes and a steady hand.

HI-FI NEWS VERDICT

The SL-XP5 may not be the best known of the early portable CD players but it's certainly one worth seeking out for those who like beautifully crafted miniatures. Its performance in a full-sized system is impressive, and there are many traditional CD players that are not quite as enjoyable to listen to. But remember to hold out for a complete and well cared for example should you be tempted.

Sound Quality: 85%

0 - - - - - - - - 100

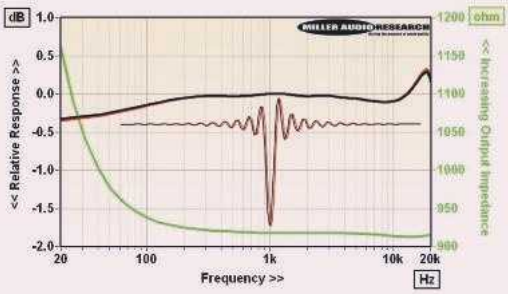
LAB REPORT

TECHNICS SL-XP5 *(Vintage)*

Rarely seen, or implemented, the PCM55 was Burr-Brown's ±5V 'low consumption' version of the full-sized ±12V PCM54 16-bit monolithic DAC used (as a dual-mono pair) in the huge Technics SL-P1200 [*HFN* Aug '13]. Just one PCM55 is used in the SL-XP5 but while the sequential left sample-by-right sample conversion would ordinarily result in a 0.0113msec offset between left (black) and right (red) channels, this is halved here (and the interchannel phase lag reduced from 90° to 45°) thanks to Technics' 2x oversampling. This is a simple linear phase digital filter, invoking both pre- and post-event ringing [see impulse, Graph 2], but in combination with the SL-XP5's analogue filter delivers a very creditable 84dB stopband rejection. The two filters also help define the player's frequency response [also Graph 2] with its very gentle ±0.02dB passband ripple and mild +0.3dB treble peak. The gently declining bass (–0.3dB/20Hz) ties-in with the increasing output impedance which reaches 1.2kohm/20Hz via the line outputs [green trace, Graph 2].

Technics achieved a maximum 1.7V line output and full 16-bit 95.7dB A-wtd S/N ratio from the SL-XP5 even though its compressive linearity trend – where signals at –80dBFs appear +2.5dB higher (and +4.9dB at –90dBFs) – suggest its low-level resolution is closer to 15 bits. Peak level distortion is moderate, reaching 0.007% at 1kHz and despite appearing initially higher at 0.035%/20kHz/0dBFs, the highest frequencies are ostensibly the *least* distorted as Technics' digital/analogue filters also remove any >20kHz harmonics [blue infill, Graph 1]. The player's jitter performance is also slightly higher at 890psec on the right channel, falling to 350psec on the left – all data-induced. **PM**

ABOVE: Distortion versus 16-bit CD digital signal level over a 120dB range (black, 1kHz; blue, 20kHz)



ABOVE: Freq. and time domain responses (left, black; right, red) and output impedance (green). Output is phase-inverted and note 2x linear phase filter ringing

HI-FI NEWS SPECIFICATIONS

Maximum output level / Impedance	1.685Vrms / 915-1161ohm
A-wtd S/N ratio	95.7dB
Distortion (1kHz, 0dBFs/–30dBFs)	0.0074% / 0.035%
Distortion & Noise (20kHz, 0dBFs/–30dBFs)	0.037% / 0.0085%
Frequency response (20Hz-20kHz)	–0.3dB to +0.3dB
Digital jitter	350psec (890psec/R channel)
Resolution @ –90dB/–100dB	+4.9dB / +6.5dB
Power consumption	4W
Dimensions (WHD) / **Weight** (w/o battery)	126x23x126mm / 480g

Rolling Boulders

The no-compromise 2010 preamp and 2020 DAC are part of the US manufacturer's ongoing 2000 series project. **Martin Colloms** listens

Hi-Fi News May 1997

Each month *HFN* will bring you an article from our vast archive of features and reviews from yesteryear

Boulder's founder and chief engineer Jeff Nelson gained his first audio engineering experience with studio mixing desks and the design of a professional cartridge tape unit. This led to a constructive interchange with the late Deane Jensen, the audio transformer wizard and the originator of a classic 'operational amplifier'. This was not an integrated circuit but one implemented at good power and wide bandwidth via the use of discrete devices.

LUXURY UNLIMITED

Jensen's design comprised a stable low-noise gain block which had wide applications for audio components, including DACs, preamplifiers and power amplifiers. Jeff made this concept his own with further refinements in the choice of semiconductors and performance. This circuit module is the core technology for Boulder designs.

ABOVE: Boulder's 2010 line preamp is pictured atop the 2020 DAC, both sandwiched by their triple PSUs

Based, as you might guess, in Boulder, Colorado, the company now produces an established line of pre- and power amps. However, in the 2000 series, price is almost no object, and finish and facilities have been taken to the limit of what is practical for luxury high fidelity.

There are enough very wealthy audiophiles in the world to make such an endeavour worthwhile, a market also tapped by Rowland Research, Mark Levinson and Cello. This is yet another level of price beyond the costly, yet still mainstream audiophile, creations of Krell, Audio Research and Conrad-Johnson. As a pair, the Boulder units reviewed here cost £50,000 – and this does not include a CD transport or a power amplifier! Both are promised for the near future.

BOULDER 2020 DAC

Matching the 2010 line controller, the 2020 is a full-size, luxurious digital-to-analogue converter with some special facilities. A comprehensive remote control is provided, built in modular form. Its keyboard allows the remote selection from six digital inputs, four of these being in balanced format (a Boulder unbalance adapter is also available for coaxial connection) plus two optical Toslink and 'ST

Glass'. In addition the 2020 has two digital outputs, for monitoring of the selected source, and a separated record output section.

Conventional balance controls can only adjust the relative loudness of the two channels, but on the 2020 an offset speaker and/or listener position may be corrected accurately by adjusting the *time* delay of one channel relative to the other, to correct for the discrepancy in distances to the listener. The display may be set for inches, centimetres or milliseconds and can correct substantial offsets of several feet. Even half-inch adjustments can be audible – the ultimate balance control for couch potatoes!

CLOUD NINE

A separate power supply (an outwardly identical unit powers the 2010 line preamplifier) is linked to the connector by a total of three cable sets, the third of these supplying the DAC's digital acquisition and microprocessor sections. As for the converters proper, these are located in diecast boxes positioned above the main chassis, and easily demounted from it. This makes upgrade or replacement a simple procedure.

Meanwhile, input switching is relay-controlled, S/PDIF signals being acquired and locked by the Crystal 84-series ADIC Signal processing which includes an NPC digital filter, an FIR type with 20-bit output (8x oversampling). After the filter comes the Boulder anti-jitter circuit, a phase-lock crystal oscillator which resynchronises the data word clock. Drive from the lower chassis to the DAC units proper is via a digital balanced interface, driving an array of five paralleled Burr-Brown 1702 converters. Next comes the first appearance of Boulder's powerful discrete op-amp module, the top-specification 993 unit performing the current summing for the five DACs to a stable output voltage.

> 'At their heart is Boulder's top-spec 993 op-amp'

Two more 993s (per channel) each operate as a three-pole Bessel filter, this leading to another pair of 993s used for the balanced audio output. At this point, the signal quality is then equal for the balanced and normal outputs, at a low 100ohm rated impedance, of 2V (4V balanced).

ABOVE: The Boulder 2020 is a full-size, luxurious DAC with the ability to adjust the time delay of one channel relative to the other by the use of the 'ADV L' and 'ADV R' buttons on the fascia

BELOW: All controls on the 2010 are perfectly flush on the amp's silver chrome and satin alloy fascia. This includes the volume control, which is operated by the touch of a finger or via the remote control

2020 SOUND QUALITY

A wholehearted commitment to the truth was displayed by the 2020, which was one of the most neutral and even-handed decoders I've ever heard. It was completely confident from the lowest bass to the highest treble, in regard to precision, uniformity, lack of distortion and high clarity. It set very high standards for all these, devoid of coloration, grain or any false emphasis, anywhere. The effect was one of majestic calm in a big system, a result which in context I'd experienced with Cello electronics a decade ago, in this Boulder perhaps tempered by the grainless quality expressed in Jeff Rowland designs.

The 2020 had good rhythmic control and timing, holding onto the musical flow and yet dynamics seemed a tad muted. With high resolution generally evident, the sound still lacked the ability to express the full transient attack and air possible, giving a feeling of 'quietness' and asking for the volume to be raised to wake things up. In practice the sound was so smooth that this poses no problem.

In the bass, it sounded tight and clear, with fine tune-playing. That high level of detail held throughout the mid and treble. In terms of the stereo image, this translated into very wide soundstages with excellent focus, especially in the treble and with very good depth and even, stable perspectives. There was also a consistent and very high level of refinement and purity.

CONCLUSION

This very costly DAC is built to superb standards of engineering and finish. With the remote control of inputs and outputs, it forms a digital system control centre, augmented by the interchannel time delay feature. While the sound quality did not fully equal the state of the art in digital replay, it nonetheless sets a ⇢

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high standard. As regards value for money, at this price level I find such notions are meaningless.

BOULDER 2010 PREAMP

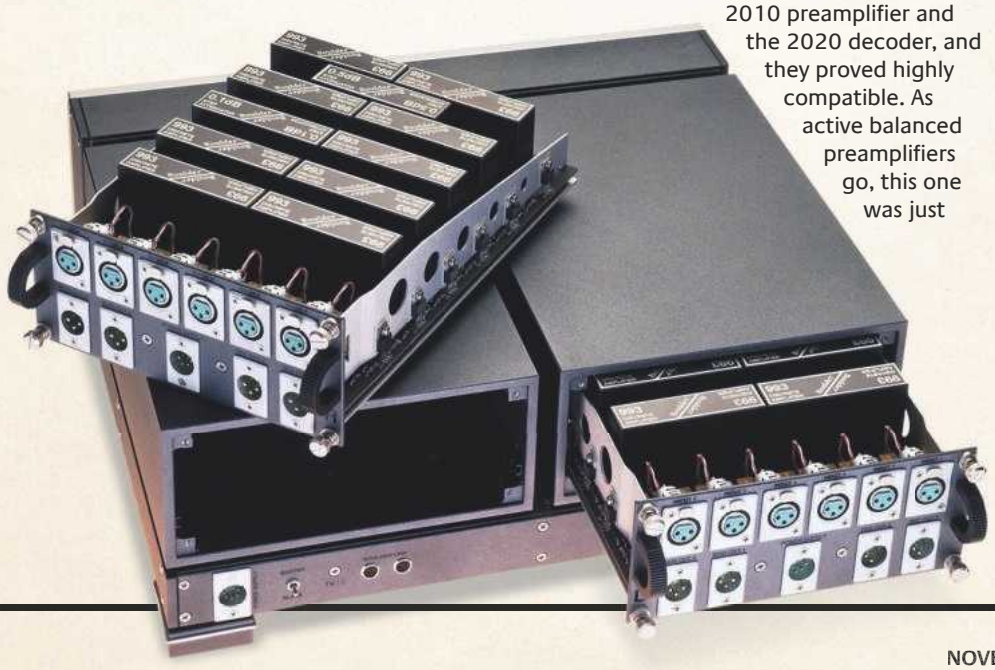
Boulder has turned the design of this line amplifier into something of an art form, again incorporating its top-of-the-line discrete amplifier module, the 993, this type including direct coupling with servo offset control. High ±24V power rails guarantee ample headroom. The balanced input impedance is high, affording minimal source loading. Independent listen and record paths are present and unusually, are fully buffered. Interestingly, the 'record' path has 12dB of forward gain, with two outputs, and is fully balanced throughout. This uses a total of four 993s per record channel.

Keeping microprocessor noise out of the audio chain, the logic commands are buffered by opto-isolators. Input signals meet a fully balanced differential input which is then summed at a 993, delivering a single-ended signal to the solid-state, switched volume control. This comprises the 0.1dB and 8dB 'L' attenuator sections operating at low impedance and thus low noise.

These combinations are further interpolated with 16x 0.5dB steps, achieved by controlling the negative feedback and hence the gain of the preceding stage. This amounts to 8dB of variation – a relatively low proportion of the available gain. A pair of following 993s operate as a balanced output buffer of low impedance (50ohm per unbalanced leg). There's no significant bandwidth-limiting in the system, while the double-mono construction assures extremely high channel separation. Triple PSUs deliver left, right and microprocessor power

RIGHT: **Both the 2010 preamp (top) and 2020 DAC sport an amber LED matrix display that can be set through nine levels of brilliance. The preamp can accommodate up to six input sources**

BELOW: **Rear of the 2010 preamp showing the modular layout of its fully discrete 993 series direct-coupled op-amps**



2010 SOUND QUALITY

As might be expected, there was a family resemblance between the 2010 preamplifier and the 2020 decoder, and they proved highly compatible. As active balanced preamplifiers go, this one was just about as good as you can get, comparing very favourably with all the contenders from Krell, ML, Jeff Rowland and Audio Research. In certain systems I have heard better from unbalanced designs, but this is a separate issue; the balanced domain has its own criteria to satisfy, notably zero hum, low noise, high dynamic range and an excellent consistency when it comes to input and output matching.

For a balance line stage, the Boulder 2010 produced a record sound quality score on my personal listening scale and like the decoder it sounded supremely controlled, focused and precise. Quality and subtlety were present over the entire frequency range while coloration was very low, the sound showing no perceptible solid-state vices, such as grain or glare.

CLASS ACT

On tonal balance, it was nicely pitched, being neither too bright nor too rich. Neutrality was the name of the game here, this preamp delivering fine stage depth and width, natural perspective ⇨

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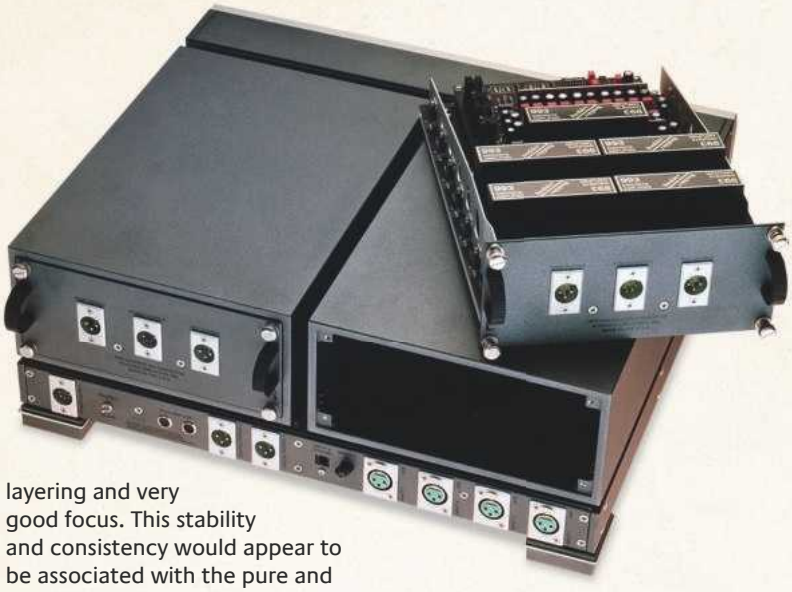

LEFT: Rear of the 2020 DAC showing the 993 op-amps that perform the current summing for the five Burr-Brown PCM1702 DACs. Two further 993s per channel operate as a three-pole Bessel filter that leads to another pair of 993s driving the balanced audio output

layering and very good focus. This stability and consistency would appear to be associated with the pure and distortion-free sound we heard.

In the bass the amp proved itself to be crisply detailed and highly informative of the character of the instrument concerned. It barely altered the quality of the source in the treble, with near holographic localisation heard here. Like the 2020 DAC, it had a measured pace that was less than upbeat, with dynamics that were thought to be a little shaded and a touch 'quiet'. Boulder's message seems to be one of considered understatement rather than a lively exuberance.

While I personally prefer a presentation that has more 'get up and go', the generally high quality of this sound here was undeniable. Not only was it clearly in the audiophile class, but comfortably in the company of top performers.

CONCLUSION

Technically, this preamplifier is about as perfect as you can get. Noise and distortion are negligible under all conditions and are maintained over a wide range of loading. It worked flawlessly, the sound was highly neutral, accurate and revealing. In fact, it is the best balanced-mode preamplifier I've so far reviewed. Against the very high cost may be set the superb build, jewel-like finish, high versatility, upgradeability and high performance. In many respects the 2010 is a true work of reference.

'This preamp is about as perfect as you can get'

BELOW: Original pages from the May 1997 issue of *HFN* which saw Martin Colloms take a trip 'beyond the high-end' with Boulder's solid-state 2010 line preamplifier and 2020 DAC

Also in *HFN* this month in 1997

HEADROOM
Dolby Digital is here and with it comes Harman Kardon's ADP303 AV processor. Ken Kessler shares his conclusions.

AVI REVISITED
AVI's S2000 Reference CD player has been improved still further. David Berriman explains how.

ALON PETITE
Peter J Comeau takes stock of this American 'mini-monitor'.

MISSION'S CYRUS SL
A stripped-down version of the fully-featured Cyrus amp, the new Cyrus SL promises 'straight line' sound at low cost. Does it deliver, asks Martin Colloms.

THORENS SYSTEM
Andrew Cartmel wonders if the company's new Consequence range is the lifestyle system to suit the Millennium.

TURNTABLE QUINTET
This group review by Matthew Thome compares the merits of the Pro-Ject 6SA, Impulse Moskito, Linn LP12, Michell GyroDec and Roksan Radius 3.

SONUS FABER GRAND PIANO
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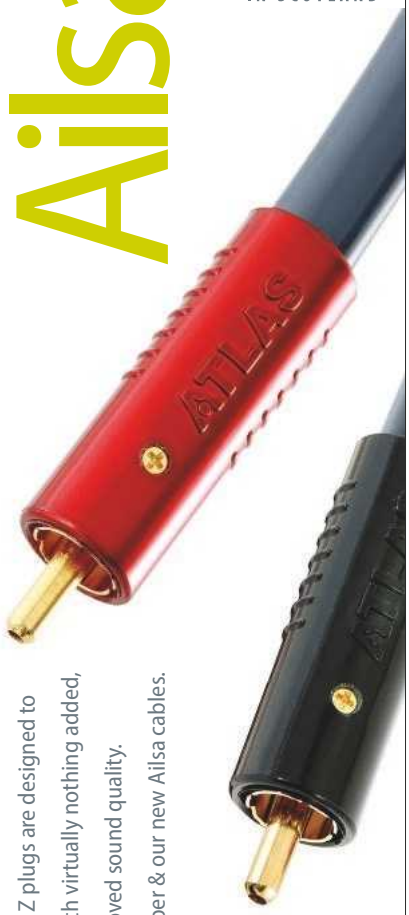

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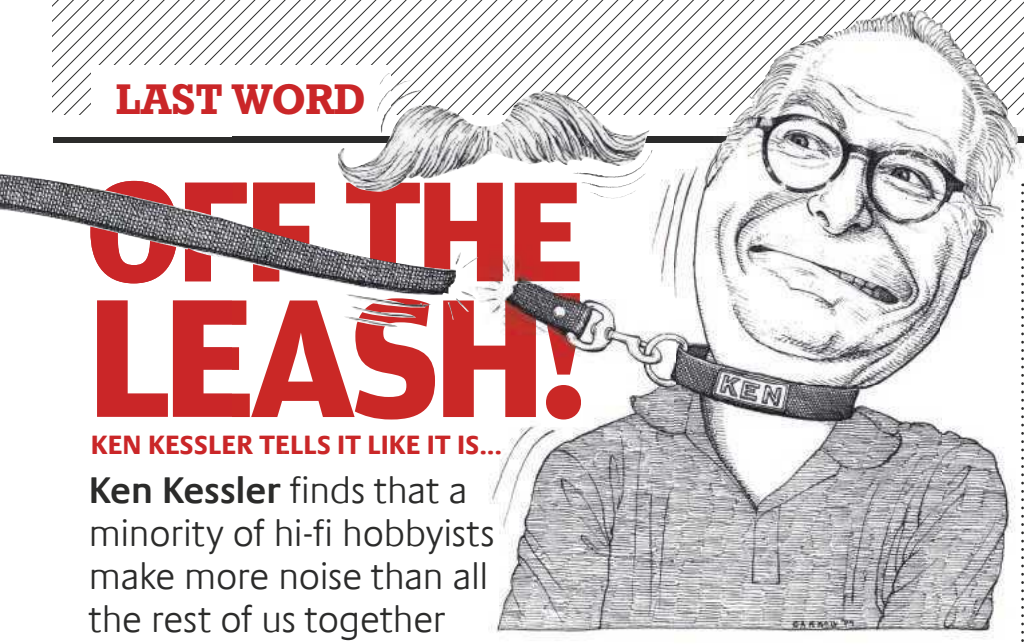

KEN KESSLER TELLS IT LIKE IT IS...

Ken Kessler finds that a minority of hi-fi hobbyists make more noise than all the rest of us together

What will come as a shock to older readers is that 2023 marks my 40th year with *HFN*. I'm not the longest-serving, but I suppose that level of longevity marks me as possessing some sort of seniority. Whether I am regarded as venerable or merely irritating, enough of a past exists to warrant reflection over what has transpired since 1983… and how little has changed.

FLAT OUT

If last month's diatribe irked those of you who perpetually gripe about the insane prices of high-end audio, it's time for another bout of accusatory bile. But what do you expect of a column called 'Off The Leash' rather than 'Rub My Tummy – Hear Me Purr'? The belief that nobody complains more about prices beyond their reach than hi-fi enthusiasts dates back decades, and my previous tirade was an attempt to put it to rest.

Actually, this issue's topic doesn't apply solely to 'civilians' (a non-pejorative word for audiophiles not employed in the hi-fi industry in any capacity), but to enthusiasts on my side of the page: that is, the reviewers. It's about a recent revelation that paints audiophiles as the original trolls, for such existed in hi-fi long before social media provided the ultimate platform for the entire planet's airing of grievances – real or imagined. As I've noted on many occasions, I have never seen such widespread whining about prices in the other luxury fields I write about, nor have I noticed this month's gripe: incessant and damaging complaints about perceived misdeeds. Yes, there are car, sport and watch enthusiasts who can be just as puerile as audiophiles, but we take the biscuit.

This behaviour applies equally to current cancel culture culprits, who view everything from children's clothing to 250-year-old philosophy treatises through a prism of race/gender/politics. But our community is not immune to such picayune battles. One savvy audio manufacturer, who is now retired, often used to excuse the more bizarre hi-fi skirmishes with this analogy: 'Why were the 1968 Paris student riots so violent? Because the stakes were so low'.

> 'But as audiophiles, we take the biscuit'

Probably the nastiest period in hi-fi was the one concerned with Linn-and-Naim versus the rest of the universe. Supporters of the former proudly identified themselves as 'Flat Earthers' and anyone who didn't buy into it was perverse. As illogical and ludicrous as it was, the Flat Earth movement had a disproportionately controlling influence over the UK hi-fi market. The effects were felt from entry-level to high-end, with its lists of proscribed gear (almost anything imported) and approved kit, starting with NAD, Rega, *etc*, until one reached the promised land of Linn/Naim ownership. The retailers who joined the cult loved it, as they had automatic sales. Everyone else suffered, the modern equivalent being the wearing of an 'I Love JK Rowling' t-shirt at a Stonewall meeting.

As one who didn't use approved Flat Earth equipment – having come from the USA, I was already familiar with Magnepan, Audio Research, Threshold, Klipsch, McIntosh, and other gear around five levels above it – I spent my first decade at *Hi-Fi News* in a state of perpetual confrontation. I was surrounded by Flat Earthers.

Cool heads persevered, however, because there was undeniable growth in interest in the gear I preferred and championed: the very high-end brands which dominate the audiophile firmament to this very day.

ONLINE RUMPUS

But back to the trolling. While the majority of dispatches from you, our readers, contain serious questions, requests for advice, or valid complaints, I was recently made aware of a *fracas* currently taking place online – where else in this era? – which differs little from contemporary trolling in the mainstream media. Sadly, nearly a half-century after the dawn of the Linn-Naim Axis, such shenanigans perpetuate the asinine behaviour of the Flat Earthers.

It is important to note that, just as Mary Whitehouse condemned films before she had even seen them, so would Flat Earthers slate high-end equipment they hadn't heard. (How do I know this? Because the gear wasn't available in the UK at the time.)

As for the latest online brawl, it involves outcry at the presence of anything digital between a master tape and the resultant LP. If I am being coy by not naming either the combatants nor the target of their ire, it's because I do not want to provide the latter with the oxygen of publicity. The point I'm making is that a bunch of disgruntled wannabees have the audacity to attack a wholly professional and successful mastering system because it doesn't adhere to their set of beliefs. Sound familiar?

I suppose one must regard this merely as a comical state of affairs, another audiophile aberration, especially when one considers that the album which sparked this furore hasn't been released yet.

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